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THE IMPLICATIONS OF LANGUAGE, CULTURE, SOCIAL CLASS,
AND COGNITIVE STYLE IN HIGHER COGNITIVE PROCESSES:
A CROSS-CULTURAL, DEVELOPMENTAL STUDY

by



AGNES YINLING YU

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "The Implications of Language, Culture, Social Class, and Cognitive Style in Higher Cognitive Processes: A Cross-Cultural, Developmental Study" submitted by Agnes Yin Ling Yu in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Educational Psychology.

Abstract

The main purpose of this study was to investigate the implications of language, culture, social class, and cognitive style in higher cognitive processes. These various concepts are viewed from a socio-historical perspective, in order to provide the background as well as the contexts for the study.

This study employed two methods of research: one, ethnographical; and one, experimental. The research was placed into the cross-cultural (i.e., Alberta and Hong Kong) and developmental (i.e., ages 6-7, 8-9, and 10-11) settings of: language (i.e., unilingual/bilingual), culture (i.e., Oriental/Western), and social class (i.e., middle/working) relationships. In the ethnographic portion, data was collected by means of the participant observation method. In the experimental portion, three tests were used: the Sigel Cognitive Styles Test; the Witkin's Embedded Figures Test; and the Vygotsky Blocks test. The general hypothesis of this thesis was that there were significant differences in cognitive performance as the effects of language, culture, and social class, and cognitive style.

The results of this study are in support of the general thesis, significantly with respect to social class, and tentatively (with qualifications) with respect to language and culture. This study suggests that language, culture, and social class may be seen as variables which intervene in the process of higher cognitive functions. Cognitive style, on the other hand, may be seen as the "very basic cognitive skills" within higher cognitive processes. When the "intervening" variables are combined with cognitive style, a picture of cognitive development emerges: that the varied patterns of cognitive performance -- particularly in concept

formation, are very much the product of qualitative experiences in language, culture, and social class. A typology of cognitive performance based on these intervening variables is proposed.

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CHAPTER I

THE PROBLEM

Introduction

The nature of today's society is characterized by inter-cultural relations. For the past decade, a spectacular phenomenon of the migration of peoples is observed. The more affluent Western industrialized nations have experienced an influx of immigrants from the more impoverished regions of the world. This influx provides the labour and skill for the development of abundant resources and growing industries -- for the maintenance of relative growth of national economies. On the other hand, within developing nations, there is an ongoing need to apply Western technologies to local industries, as a means of upgrading the general standard of living. The dominant means for this achievement is education. Consequently, education has been looked upon as the chief means of advancement for the nation and its people. Hence, education has been raised to the level of a determinant of relative wealth and progress of a nation. For example, universal education and the accessibility to various levels of education are often seen as indicators of a stage of progress. By and large, the Western-type of education is considered the most "successful" means of achieving the acceptable and desirable standards of living. Concomitant with education is the teaching of a Western language -- for the purpose of building a link between different cultural groups, as well as a tool to obtain knowledge from the more advanced nations. A case in point is the People's Republic of China in the late 1970s, with its emphasis on Western technologies and foreign languages.

In the domain of advancement of a nation, educators have been given the task of building a cultural link as well as educating the children

within that society. Education by popular definition generally implies a system which would provide the necessary means for advancement, intellectually and economically, for the individual and for the community. This raises a pertinent question: Does a singular type of education serve the purpose of intellectual development for all children (?); at all times (?); and in all social circumstances (?). Research (Cole & Scribner, 1974; Bruner, Olver & Greenfield, 1967; and Lesser, Fifer & Clark, 1965) has indicated that it has not; that there are varied patterns of intellectual or cognitive development among children. In the main, these variations relate to the domains of language, culture, and social class in cognitive processes.

Language: The Social Means of Cognition

A prevailing zeitgeist in social psychology, stemming from the seminal works of Vygotsky (1939, 1966) concerns the role of language as the social means of cognition. This particular orientation investigates how language is acquired in a social context -- between people, and then is used to serve higher cognitive functions -- within the individual. Within this theoretical framework (Luria, 1976), the social and cultural contexts relating to language acquisition and cognitive development are examined. One group of social psychologists, primarily working in the so-called area of bilingual studies (e.g., Bain, 1977; and Fishman, 1965), seem to have captured the essence, if not the substance, of this Vygotskian view of language. These researchers are particularly sensitized as to how different patterns of social relationships between and within communities precipitate significant variations in the social means of cognition. Bilingual studies of mixed European languages *cum* social relationships (e.g., Bain & Yu, 1979; Fishman, 1976), and of mixed European-African

languages *cum* socio-cultural relationships (e.g., Greenfield & Bruner, 1969; Cole & Scribner, 1974) are fairly well documented. However, a definite lacuna exists in European-Oriental language *cum* socio-cultural relationship studies, and these influences upon cognitive performance. This thesis will address itself to this lacune of knowledge by conducting a cross-cultural study among Chinese and English speaking, unilingual and bilingual children of different social backgrounds, in Alberta and Hong Kong.

Cognitive Style

Another area of investigation which has received wide acclaim is the area of "cognitive style." Research in this area offers promise as well as challenge to our understanding of cognitive development.

The notion of cognitive style generally connotes an individual's consistent mode of behaviour in approaching various cognitive functions. However, the term cognitive style has been applied so broadly in theoretical and research literature that it has become vacuous rather than heuristic, confusing rather than revealing. It has been used, in the past, to encompass so many different dimensions of cognitive processes that the whole notion simply lacks clarity today. On the one hand, a careful perusal of the literature reveals that what is intended by "cognitive style" is often researcher *cum* context specific. For example, researchers have coined numerous specific stylistic terminologies: Bruner (1956) distinguishes "focusers" and "scanners;" Broverman (1960) distinguishes "conceptual and perceptual dominance;" Gardner (1953) distinguishes "leveling and sharpening," "field articulation," and "equivalent control;" Guilford (1959) distinguishes "convergent, divergent, and evaluative" types of cognitive operations; Kagan, Moss and Sigel

(1963) distinguish the "descriptive, relational, and categorical" styles in grouping and sorting; and Witkin (1962) distinguishes the "field-dependent-independent" modes of cognitive style. There is considerable justification for the coining of these various terms. Given the theoretical orientation of a researcher and the purpose of his/her experimental methodology, specific terms can capture the conceptual intent of a thesis; and thus describe a person's style of performance in a certain cognitive dimension. On the other hand, there seems to be in each theoretician's work the implicit claim of unity; that is, cognitive style is holistic and a unitary phenomenon. They too easily suggest that "their cognitive style" transcends either the whole of perceptual, conceptual, affective, intellectual, personal, and other domains of the individual, or, encompasses some combination of these domains. One thrust of this thesis is to analyse the various views (particularly that of Sigel and Witkin) on cognitive style. The rationale for selecting these particular constructs is based on criteria that are relevant to this study. First, the theoretical thrust of this thesis is towards a holistic, developmental approach in cognitive processes. Second, the availability of standardized research instruments developed specifically for these theoretical approaches. Third, both Witkin and Sigel claim their stylistic approaches as encompassing the perceptual and conceptual dimensions of cognitive behaviours. Fourth, these two stylistic approaches have been widely used in research; and data on reliability and validity are readily available. Thus, the Witkin and Sigel stylistic constructs are chosen, with the aim of abstracting the common principles and re-formulating them into a more precise notion.

Higher Cognitive Processes

One facet of this proposed re-formulation, albeit an important one, concerns the effects of cognitive style on the development of what is referred to as the "higher cognitive functions" (Cf. Vygotsky, 1966). There is a general lack of literature in this area. The relationship between cognitive style and higher cognitive functions has been either ignored or only cursorily treated by previous researchers in the area. Another thrust of this thesis is to theoretically integrate and empirically demonstrate the dynamic relationship between cognitive style and higher cognitive processes.

Higher cognitive processes, according to Vygotsky, refers to the mental processes of logical memory, voluntary attention, verbal thinking, and concept formation. In particular, concept formation involves different cognitive activities: abstraction, generalization, differentiation, analysis, and synthesis. Vygotsky suggests that each of these activities, to greater or lesser extents, is contingent upon the acquisition of the social means of cognition -- language. To the extent that higher cognitive processes are contingent upon the social means of thought, then differential patterns of this type of functioning can be explicable by exploring the influences of specific dimensions, namely, language, culture, and social class. Hence, questions to which this thesis is addressed are: What is the relationship between concept formation and language (or linguality)? What is the relationship between concept formation and culture? And what is the relationship between concept formation and social class?

An Integration of the Theoretical Works of Witkin, Sigel and Vygotsky

A particular focus of this thesis is the works of Herman A. Witkin

and Irving E. Sigel, and their respective views on cognitive style. Both claim that perceptual and conceptual domains of cognitive style are intimately related. It is the contention of this thesis that only tenuous evidence has been offered in support of this claim. Moreover Witkin and Sigel have not considered the relationship of cognitive style to higher cognitive functions. Lev Vygotsky, on the other hand, had done impressive work in the area of higher cognitive functions, but had not considered the role of cognitive style within these activities. Moreover, the Vygotskian general thesis itself requires further precision. That is to say, further analysis into the relationship of social and cultural phenomena in cognition is needed. This thesis proposes to integrate the modified theoretical and empirical premises of Witkin, Sigel, and Vygotsky. Simply stated, the goal for this study is to extend and elaborate the socio-cultural dimensions of Vygotsky's thesis, and to use the reformulated thesis to explain and interpret a clarified notion of cognition style.

Statement of Purpose

The purpose of this study is five-fold: (1) to explain and clarify the claim of perceptual and conceptual unity of cognitive style; (2) to formulate a more comprehensive thesis of higher cognitive functions inclusive of the premises of cognitive style, language, culture, and social class; (3) to extend and elaborate the Vygotskian thesis to include various social, cultural and psychological dimensions; (4) to conduct a cross-cultural study of the effects of language, culture, social class, cognitive style in higher cognitive functions; and (5) to explore the psychological consequence of compulsory second language acquisition among minority people.

Limitations of the Study

1. The test instruments used in this study are: The Children's Embedded Figures Test (CEFT); the Group Embedded Figures Test (GEFT); the Sigel Cognitive Style Test (SCST); and the Vygotsky Blocks (VB). No attempt was made to re-establish the validity and reliability of these instruments. The statistical data provided by previous users of these instruments are accepted at face value.
2. The administration procedure of the VB was modified by this author and verified in a pilot study. The latter precaution notwithstanding, this modification should be noted as a possible limitation.
3. Representativeness of the samples is difficult at the best of times, and is even more problematical in a cross-cultural study. In this study, it was not possible to equally represent all the samples. This decision was based on the information from the ethnographic studies.
4. The children involved in the study were selected from populations in Hong Kong and Alberta. Therefore, the empirical conclusions are not directly generalizable beyond these communities.

Research Questions

1. Is cognitive style self-consistent across different domains of cognitive behaviour, particularly the perceptual and conceptual domains?
2. Is stylistic behaviour related to higher cognitive functions?
3. Are there significant differences in stylistic and concept formation behaviours related to age? to linguality? to culture? and to social class?

CHAPTER II
SYMBOLS, CULTURE AND SOCIAL STRUCTURE
A CONCEPTUAL FRAMEWORK

Introduction

The purpose of this chapter is to present a conceptual framework from which to place cognitive development in context. In general human development, symbols (including language), culture and social structure are considered as components of a complex network of variables. Furthermore, these are regarded as intervening variables which mediate between the human and his/her surrounding world. The way in which these different variables act and interact has important implications for the way in which experiences are constructed. This "intervening" approach places emphasis on the roles of symbols, culture and social structure in the analysis of human cognitive behaviour. At the same time, an interdisciplinary orientation is used in the formulation of the conceptual framework; thus more meaningful interpretations can be made about human behaviour.

The main themes can be viewed from a socio-historical perspective. Schaff (1973) states that such a perspective serves several purposes in the pursuit of knowledge. First, contemporary ideas can be put into an historical perspective. Second, the history of ideas could form the background for the present problem. Third, a problem is usually grounded in different schools of thought on a particular topic, that is, in the domains of conceptualizations, philosophies, strengths and weaknesses of the respective fields. Fourth, past ideas were developed at certain periods of time, within specific milieux, conditions, and requirements of scientific development. When these same ideas are transported in time,

they need to be adapted to the new conditions and situations. In other words, new ideas are reborn from the old ones.

The adoption of a socio-historical approach in this study is also inspired by the works of Vygotsky. He stated that if one were to attempt a comprehensive understanding of human development in general, and cognitive development in particular, then one might turn to the socio-historical origins for such an investigation. This perspective would allow for the way in which ideas evolve, as well as account for the changes that are made, in realizing their contemporary forms.

This chapter is divided into three sections. First, symbols in general, and language in particular, are defined from the works of Bertalanffy, Cassirer, de Saussure, Sapir and Werner. Second, culture, as defined by Bain, Bloomfield, Kroeber, Sapir, Silva-Fuenzalida, Taylor, Voegelin and White will be discussed and integrated. Third, social structure, as defined by Bernstein, Bronfenbrenner, Marx, Porter, Sorokin, Stacey and Weber will be reviewed and analysed, then utilized to provide a structural base by which to interpret human development.

Symbols

Symbols play a vital role in the history of human development. In order to understand their significance in humanization, one could examine semiotics -- the science of signs. This acts as a departure point from which to define symbols, and subsequently, to define human language.

The study of semiotics compares as well as contrasts the sign systems of humans and all other species. Bain (1974) captured de Saussure's notion of the sign by providing this definition:

A sign refers to any phenomenon (object or event) within a behavioral field which provides some information to an organism (animal or man) about some other phenomenon. On the basis of this information the organism behaves adaptively. (Bain, 1974, p.56)

This definition presupposes a common base from which to look at sign systems. According to this view, there is no essential difference between the human and sub-human species. All organisms make use of the sign in order to orient themselves towards their particular environments. This perspective implies a continuous element in the phylogenesis of humans and non-humans -- a similarity in which both adapt to their respective environments, without exception.

This common sign system can be further broken down into "signals" and "symbols." This break-down marks the distinction between humans and other species. De Saussure (1959) defines signals as signs toward which animals adapt in a more-or-less unmediated, automatic way. He defines symbols as signs toward which humans adapt in a more-or-less mediated act of knowing. The crucial difference between humans and non-humans is in this latter category. The ability to know and to act on this knowing has placed humans in the top echelon of the animal kingdom. In knowing, humans now have the capacity to rise above the constraints of the physical environment.

Another view that does not differ much from de Saussure's, is presented by the philosopher Cassirer. Cassirer (1944) sees signals and symbols as two different universes of discourse. A signal is tied to the physical world of being; a symbol is related to the human world of becoming. Cassirer further remarks that the difference between the two worlds of being are qualitative rather than quantitative. In the quantitative world of the animals, the main systems of adaptation are the

receptors and effectors system -- for the purpose of receiving and emitting messages. In essence, then, animal communication is based on fixed and non-varied sets of messages which are species-specific, purely for the adaptation to the physical environment or *Umwelt*. These ideas draw heavily on the biological principles of von Uexküll. From the biological world of receptors and effectors, Cassirer ascribes a qualitatively different orientation to the human world -- one that bridges the gap between the physical reality and the "lived" reality. This new reality is not bound by organic life or the natural order of the universe. The link between them is the symbol. From the physical existence of animals, humans are elevated to the status of *animal symbolicum*. This conceptualization has enriched the study of symbols; and has opened up a new vista in the study of humans. By *animal symbolicum*, one can now look at humans in a new light, freed from the confines of a physical world, and into the higher world of metaphysics.

Yet another view of the sign system -- one that is essentially the same as de Saussure's and Cassirer's, is presented by the psychologist Werner (Werner & Kaplan, 1963). Like Cassirer, Werner draws on von Uexküll's principle of the organism-*Umwelt* relationship. In the world below humans, this species-specific relationship is a "closed" system, characterized by a deterministic relationship from which there is no escape. Humans, on the other hand, being higher on the evolutionary scale in the animal kingdom, have undergone a radical transformation in their adaptive process. This transformation has serious implications for human ontogenesis. From the "closed" and deterministic bond of the organism and the physical world, humans are thrust into an "open" relationship with their world. This openness creates a gap that must be filled. To adapt

to this openness, humans now must learn specific skills in order to overcome the physical world. Departing from the mere reaction of animal existence, humans must acquire the ability to know their world. The tool for this knowing is the symbol. With it humans are now able to manipulate their world by cognitive means rather than by physical means. With the combination of the symbolic and cognitive faculties, humans have now stepped out of the world of physical existence and stepped into the world of "knowing" and human consciousness.

The biologist Bertalanffy (1965) offers a further refinement of these ideas. According to Bertalanffy, subsumed under the superordinate structure of signs are signals, schemata and symbols. Signals can be natural (i.e., physiological) or artificial (i.e., conditioned, e.g., the ringing of the bell in the Pavlovian paradigm) responses to stimuli. Schemata are "instinctive" actions, actions which are "inherited neurophysical mechanisms" (e.g., dances in the "language" of the bees; "physiognomic understanding" of people's emotive states). Symbols are of a different category from the above, in the sense that they are neither natural, conditioned, nor instinctive. These are characterized by being representative, freely chosen, and transmitted by tradition; and all are characteristically human. However, Bertalanffy's language system overlaps the three classifications of signs, and is subdivided into animal and human language. He provides three characteristics of language, namely, expressive, appeal, and representative. The expressive represents the inner or innate states of living things. The appeal arouses actions (e.g., bird's song, human's smile) or reactions based on innate or conventional signals or symbols (e.g., an animal's cry of distress, a red light for stop). And the representative applies to the acoustical, optical, tactile, sensory

media and symbols to "stand in" for other entities or events. These symbols are used to construct a vocabulary in order to represent things or events (e.g., flag language, sign language), and they have pre-established rules (e.g., grammar in a language). From the above descriptions and characteristics of sign and language systems, Bertalanffy's conceptualization denotes a certain continuity from humans to sub-humans, although the bond becomes more remote under the classification of symbols. His main distinctions of the sign and language systems are their accessibility to transmission by learning and traditions, which are uniquely human, and freely created.

The anthropologist Leslie A. White (1949) has written a monumental essay on the symbol as the origin and basis of human behaviour. White distinguishes the behaviour of humans into the symbolic and non-symbolic. At the non-symbolic end, which represents the physiological manifestations of behaviour, the behaviour of *Homo sapiens* is not radically different from other species of animals -- a continuity of this type of behaviour exists across species. At the symbolic end, articulate speech and its concomitant cultural behaviours transform the human from a mere animal existence into the world of human existence.

Each of the above scholars, although addressing this subject from different perspectives, has come to see the sign system, and the human symbol system in particular, in a similar manner. That is, in phylogenetic development, symbols -- or the human's ability to create and transmit symbols -- differentiate humans from all other sub-human species. Each of the different disciplines, in its own way, has attributed unique qualities -- human qualities -- to the symbol system. Implicitly the symbol system precludes psychological activities, as in the act of knowing,

awareness or consciousness, representation and creativity, all of which sub-humans are incapable. On the biological domain, there is, to a certain extent, a continuum across species, in the way each of them make use of information to adapt or react to their physical world. In the psychological domain, the unique qualities of the symbol system are radically different from the signal system or animal language system. The nature of the symbol system puts humans on the highest pedestal in the animal kingdom. It takes humans out of the immediate biological givens into the realms of mediated mental processes. The means by which humans achieve this highest stage of evolution is through language -- the symbol *par excellence*.

Language

Historically, there are various definitions of language, from the ancient Greeks to current contemporaries (See, Merleau-Ponty, 1973). Heraclitus saw language as a divine being, an expression of freedom. Plato conceptualized language as expressing what consciousness envisions. Descartes conceived of the possibility of a universal language. Locke envisioned language as a state of consciousness. Berkeley expressed the conception of language as giving an illusion of the universal. Von Humboldt implied language as the mind realizing itself. And Cassirer denoted language as a phenomenon of concrete expression. Each in his own way has ascribed a unique quality to language, and has related it to human activities.

Language is not merely speech sounds, rules of grammar, or a communication process. Nor is it just phonemes, morphemes, syntax or lexicons as linguists would define it. Nor is it just pragmatics, syntactics or semantics as semioticians propose. Nor is it simply a tool for communi-

cation among people, with its respective linguistic elements as psycholinguists would interpret it. Nor is it only a question of the acquisition of language within a social context (i.e., within the society, speech community) as sociolinguists would explain it. It is all of these, and more. Language is the historical heritage of a people, and reflects the physical as well as the social worlds of a people, developed within a group context, and transmitted socially. It encompasses different dimensions of the symbolic universe: myth, art, religion, history, ideology, philosophy, and even idiosyncrasies of a particular speech community. These different dimensions form "the varied threads which weave the symbolic net, the tangled web of human experience" (Cassirer, 1944, p.25). This "symbolic net" provides the foundations for all activities characteristic of the human mind, for example, in perception, in organization of experience, in formulation of ideas and concepts, and in expression of emotions and experience. Essentially language constitutes a structural scheme by which the world can be named, classified, ordered, organized. According to Ullman (1968, p.30) a language is "a prism, unique in structure, through which we view the world and which refracts and analyses our experiences in its own particular way." Thus, different languages express different world views. A particular language provides a frame of reference for the speaker of that language.

De Saussure (1959) differentiates language into "*la langue*" (language) and "*la parole*" (speech). The former refers to the universal; the latter refers to the individual (or personal) and temporal. These concepts could be the clues by which one can look at language development within a speech community, and in particular language development of the individual. In the latter case, the language acquired by the individual in his/her social

milieu would be incorporated into his/her speech. In turn, this speech would reflect and give shape to the individual's way of perceiving, conceptualizing and organizing his/her mental experience. These concepts could provide important insights into the understanding of differences in cognitive processes.

Merleau-Ponty (1973) carries de Saussure's ideas even further. He conceptualizes *la langue* as "silence," perhaps implying something which is external to the individual. *La parole*, on the other hand, is seen as something which is active and conscious, at the same time able to render *la langue* "alive." These two differentiations of language are not dissimilar to Vygotsky's conceptualization of language (as an external system) and speech (both inner and verbal, as related to the individual).*

With the development of language, humans now have an access to a tool by which to name objects and events in their world, to organize and categorize these into ways which would help them make sense of the world. Language can be said to be a "social institution" (Barthes, 1967), the cumulative "labor of the human mind" (Humboldt, in Cassirer, 1973). Both these concepts imply a communal effort for confronting both our physical and psychological worlds. Having then defined language in a universal sense, we might now proceed to put it into a context -- a cultural context that might give it its particularistic meaning.

Culture

The rise of language and its advancement among peoples, has given birth to a unique phenomenon in the symbol world. Communication is now

*These latter ideas will be discussed in Chapter V.

possible among people. People congregated. Consequently societies are formed. And in time, civilizations emerge. The word "culture" dates back to the classic or even pre-classic Latin -- *cultura*, which implies cultivation or nurture. However, the actual use of the word emerged much later, in post 1750's (Kroeber & Kluckhohn, 1952), from the German word *kultur*, the use of which was restricted to its national confines. Civilization, a word in the Romance languages and the English language, was more commonly used, denoting social cultivation. Social cultivation implies that civilization is cultivated by social efforts. The word culture came into being thereafter. Like language, it too relied heavily on historical accumulation and social transmission.

With regards to culture, the general consensus among anthropologists is that it is a collective term denoting all behaviour patterns socially acquired and transmitted by the means of symbols (Kroeber & Kluckhohn, 1952). It represents "all those historically created designs for living, explicit and implicit, rational, irrational and nonrational, which exist at any given time as potential guides for the behavior of men" (Henle, 1966, p.3). White (1949b, p.15) defines it thus:

...the cultural category, or order of phenomenon is made up of events that are dependent upon a faculty peculiar to the human species, namely, the ability to use symbols. These events are the ideas, beliefs, languages, tools, utensils, customs, sentiments, and institutions that make up the civilization -- or culture, to use the anthropological term -- of any people regardless of time, place, or degree of development.

White's definition captures the universalistic meaning of culture. He includes within it all manners and phenomena associated with human activities. Culture thus embodies all those attitudes, patterns, habits, views, manifestations of a people -- which give it a distinctive place in the world of humans.

However, culture does not stand by itself in the world of humans. The prerequisite for its development lies in language. According to Sapir (1966, p.7) "...language enables human beings to transcend the immediate given in their individual experiences and to join in a larger common understanding. This common understanding constitutes culture." The eternal debate between anthropologists of the cultural persuasion and the anthropologists of the linguistic persuasion concerns the relationship between language and culture. Each in their own way attempts to put forth the view that one is the logical component of the other.

Most cultural anthropologists regard language as part and parcel of culture. These (Boas, 1938; Hockett, 1950; Hoijer, 1948; and Whorf, 1949) see language as an element parallel to other elements which constitute culture, as in beliefs, artifacts, customs, myths, and religion. They insist that culture is essential in moulding language and in giving it its particular meaning in a particular society. Whorf (1949) emphasises that man's thinking, of which language is the most significant component, is essentially structured by his culture. Sapir (1929) to a much lesser extent, supports this assertion. He states that "language does not in any deep sense 'reflect' culture, rather language represents a historical artifact of culture." This statement would seem to ignore the question of how culture came into existence -- through language and the association of peoples. The tendency is to recognize culture as the superordinate category to which all the components of human activities are subordinated.

Anthropologists of the linguistic orientation and linguists in particular, contend that language and culture are concomitant or parallel developments. These (Bain, 1942; Taylor, 1950; Voegelin, 1949; 1950; and White, 1940) propose the contending view that language is a distinct order,

a vehicle through which culture can be transmitted. This view attempts to show the distinctness of culture and language, that one in no way is determined by the other. Voegelin (1949) points to the separateness of the linguistic and cultural techniques in analysis in their respective areas. Silva-Fuenzalida (1949) supports this whole contending view by providing the illustration of a person learning a foreign language. The enculturation of an individual to that foreign culture would not be possible until that individual has acquired that new language. Taylor (1950) proposes another convincing argument for language as a distinct system. He states that unless a child has gained some control of speech, his/her enculturation progress in other areas would be limited. This linguistic orientation admits the independent role of language in the enculturation process of the individual. Language, seen in this light, has assumed an uncompromising role in the development of the individual.

Both positions are emphatically stated. In contrast to these two positions, this thesis proposes a third -- one that takes a more-or-less "compromising" perspective. This emergent view acknowledges an inter-dependent relationship between language and culture. This view has been supported by the writings of Greenberg (1948), Sapir (1966), and Bloomfield (1945). Sapir (1929) asserts that "culture may be defined as what a society does and thinks. Language is a particular how of thought" (p.218). Language and culture, each in its own way, is a part of a more encompassing whole. The cultural universe provides for the particular patterns in that society; whereas the language universe provides the substance (in the form of words) that expresses those patterns. Bloomfield puts it succinctly:

Every language serves as the bearer of a culture. If you speak a language you take part, in some degree, in the way of living represented by that language. Each system of culture has its own way of looking at things and people and of dealing with them. To that extent you have learned to respond with a different selection and emphasis to the world around you, and for your relations with people you have gained a new system of sensibilities, considerations, conventions, and restraints. (1945, p.625)

In sum, the system of culture or language, is *sui generis*. Each is unique in itself. At the same time, each one requires the existence of the other for its "particularistic" (cultural) "expression" (linguistic). Both, in their own way, have encapsulated a macro-view of certain aspects of human development. This view provides the specific content as well as patterns by which to interpret human behaviour, in a universalistic and a particularistic manner. With this in mind, it is still insufficient as the only way to unravel the intricacies of human behaviour. In order to find further explanations which could account for differences in human behaviour (which arise outside of the linguistic/cultural constraints) one would have to consider another system for explanation. One system which may bridge this gap, and simultaneously provide some answers to the whys of differences in behaviour -- is the social structure system.

Social Structure

Social structure, like language and culture, came into being with the development and formation of social groups, and progressively, societies. Like language and culture, it, too, is a dynamic, ongoing process that evolves with time. "Social structure" has become common terminology in disciplines such as sociology, history, politics, and anthropology. However, its integration into the field of psychology has yet to be acknowledged. In psychology, the tendency to place little

importance on the overall effects of the nature of society upon human behaviour has greatly limited research efforts in this discipline (Herriott, in Stacey, 1976). At this point in the discussion it seems appropriate to address the issue of impact of social structure on human behaviour, and thus to give it the long overdue recognition in psychology. The inclusion of this comprehensive concept into the study of human behaviour, will then provide a more meaningful way in which to interpret the differences in cognitive behaviour within diverse social contexts.

At the psychological level, a society (or group) functions as a locus of knowledge and experience for its people. Social structure conveys a system of organized ideas and behaviours in a society. It defines the network of social relationships, social organizations and social institutions. It determines the interrelations and interactions of different social groups within a particular society. At the sociological level, society has been conceptualized by sociologists such as Durkheim, Marx, and Weber "as a mutual dependence of people reciprocally connected by interaction in production, distribution, exchange, consumption" (Stacey, 1976) in all manners of living. It follows from this view that people do not exist in isolation. They are entangled in a web of social relations. It is the patterns of these relations which give rise to differential places for the members of a society. At the same time, social structure implicates child-rearing practices, family patterns, and educational/occupational opportunities, and extends into the domains of class/social stratification.

Class and Social Stratification

The concept of class and social stratification has its origins in the Europe of the Industrial era. There are three main schools of thought

which have generated much discussion and many analyses of the topic. The proponents of these schools are Marx, Weber, and Sorokin. Their basic analytical focus is on the nature of social structure.

Within the Marxist school, Lenin has defined class as:

...large groups of people which differ from each other by the place they occupy in a historically determined system of social production, by their relation (in most cases fixed and formulated in law) to the means of production, by their role in the social organization of labour, and, consequently, by the dimensions and methods of acquiring the share of social wealth of which they dispose. Classes are groups of people, one of which can appropriate the labour of another owing to the different places they occupy in a definite system of social economy. (in Stacey, 1976, p.65)

The above conception of class is production and labour based. It implies the acquired privilege of one group at the expense of another. The ones who are in the position of control of production could, by the power invested in them, influence the form of the social relations that the society would take. This line of thinking falls within the ideology of the determining role of the economic structure (production and labour) in relation to other societal structures. This is the hallmark of Marxist ideology. Marx further elaborated on the unequal relationships between the bourgeoisie (owners, capitalists) and the proletariat (wage-earners, workers). The ultimate way to overcome this unequal distribution, Marx theorized, was through the means of revolution. Marx's view represents a radical means of instigating change in a society, if necessary, by violence. This type of ideology had its heyday during the post-industrial era -- circa early 1900's in Russia and Mexico; and even into the mid-1900's, in the case of China. Even in recent decades in the Third World, the populace is still going through post-industrial and colonial subjugation. However, in the Western technological societies, the advance

of technological domination had radically changed the social relations within societies. The Marxist ideology which was hailed as a fitting political axiom had given way to less extreme ideologies, representing the prevalent political climates (Porter, 1965).

Weber, like Marx, recognises the implications of the economic order in class stratification. He further extends his stratification theory to include a social order, which is distinct from the economic order. However, Weber's definition of class is still closely tied to the economic order. Classes represent the possible bases for communal actions. Classes also distinguish the relationship between the propertied (the economically powerful) and the non-propertied (the economically powerless) within the market system. On the other hand, status/social prestige and power are based on the social order, on the differential evaluations of social honour ascribed to the various groups in society (Weber, 1970). This social honour, to a certain extent, may be influenced by economic status, but is in no way governed by it. Weber acknowledges the overlapping relationship between classes and status groups, and the interrelatedness of classes, status and power as a comprehensive framework under which a society operates, or to use Weber's term "societalization." Weber's theory, in comparison with Marx's, represents a more moderate version which includes both economic and social determinants of power. This theory suggests an inherent belief in the possibility of social mobility across class, based on ability and social position. Weber theorizes that bureaucracy and strong (as in charismatic) leadership is the key to control of the masses and any conflicts between classes. This is the crucial and distinctive difference between Marx and Weber. With the development of Weber's theory, one sees a progressive move towards power (both economic

and social) invested in the "elites" of the society. Any actual upward mobility thus becomes very limited.

Sorokin, on the other hand, offered a theory of social mobility which was broader-based and more flexible than either Marx's or Weber's. He conceptualizes mobility as both vertical and horizontal. Within the vertical category is social stratification, that is, the differentiation of social classes, unequal distribution of rights and privileges, social power and influence. Social stratification is found in the occupational, economic and political domains, each of these domains being interrelated. The horizontal category, on the other hand, implies lateral movements within a class. A class is "the totality of the people who have a similar position in regard to occupational, economic and political status" (in Stacey, 1976, p.70). Sorokin explains class differences as "the consequence of increasingly superior genetic endowment and environmental conditions as the social hierarchy is ascended" (in Stacey, 1976, p.71). This idea, which allows the privileged classes to gain at the expense of the talents of the lower classes, coupled with the emphasis on "personal upward mobility" of all classes, promotes a status quo situation. Sorokin's conceptualization of class and social stratification is retrogressive and deterministic compared with Marx's or Weber's. Nonetheless, it appears to reflect the prevailing attitudes of the post-industrial era in North America (cf., Porter, 1965).

Otis Duncan is one such social scientist who has formulated his study on social stratification and its relative impact on the U.S. social structure, based on the conceptual orientation of Sorokin, and has received wide acceptance (Stacey, 1976). In Canada, the idea of "equal opportunities" for mobility and the notion of classlessness are the favoured

and prevailing attitudes, and the Marxian or Weberian ideology is seen as largely irrelevant in unravelling the social and economic fabric of Canadian society (Porter, 1965). In Hong Kong, the notion of social class still prevails, with the bulk of economic power resting in the hands of the elite upper classes (Djao, 1979).

In summary, these theoreticians have provided us with frameworks by which to analyse the nature of class and social stratification. Admittedly, some of their ideas are outdated. Nevertheless, they still provide useful structures which could be modified to suit the contemporary contexts. They attempted to produce universal models which could account for the "masses" in society. A grave omission in their respective theories is that sub-cultural or minority groups that do not fit in the "mass" image are not included. But it is these latter groups that seriously dramatize the stratification of the society. Class, or social stratification, is a powerful social category. The structure of class determines the structure of power. It can segregate as well as divide people of different classes, thereby bringing disharmony and conflict to a society. The recent concept of class has become more elusive and comprehensive. It gives the impression of classlessness and equality of opportunities, which are consonant with the prevalent North American attitude (Porter, 1965). The notion of social class embodies the reality of the intricacies of inter-relationships, and of different variables (i.e., occupation, income, education) in a society. These convoluted threads give birth to different conditions of life at different levels of the social order. Members of a society, by virtue of birth into a particular social position, learn to develop different conceptions of social reality which reflect their existential situations (Kohn, 1975). Anisef (1974) would go so far as to

state that there is the tendency for children to inherit the psychological characteristics of their parents. These differential views of their world perpetuate class-related attitudes and behaviours. Unfortunately, the continuation of these contrasting practices tends to give rise to different traits and behaviours in children from diverse social origins. These are then taken as stereotyped behaviours. Ultimately, further inequalities and injustices are perpetuated.

Child-rearing Practices

The concept of class is not solely confined to the domain of class differentiation of groups of people. Unfortunately, class pervades the whole range of human behaviours, and has a strong influence on child-rearing practices. Such class differences have been variously noted (Bernstein, 1961; Bronfenbrenner, 1970; and Mayer & Buckley, 1970). For ease of discussion, this author will differentiate two classes (although more could be identified) -- the middle class (*petite bourgeoisie*) and the working class.

Bronfenbrenner (1970) cautions that child-rearing should be viewed in the light of these class differences. Differences in the following areas are recognized: breast-feeding; weaning; toilet training; care and attention of the young, and in the area of discipline. Generally, middle class mothers have more access to current information and consultation on childcare (witness the adherence to Dr. Benjamin Spock's childcare principles, or the general acceptance of books on childcare). These mothers read more and tend to take these readings more seriously than their working class counterparts. Accordingly, treatment for their children is affected. Working class mothers, on the other hand, tend to retain familiar methods in child-rearing practices, and are less likely

to consult expert opinions (Kohn, 1975). They tend to stay with what is familiar.

In breast-feeding, middle class mothers tend to adhere to schedules, whereas working class mothers tend to feed on demand. In weaning, middle class mothers would follow guidelines set up by practitioners and would be very concerned about their children's nutrition intake, whereas working class mothers are more lax in their attitudes in these regards. In toilet training the same above patterns can be seen between the mothers of the different classes (Bronfenbrenner, 1970). In general, middle class mothers are more concerned with the proper time for toilet training while working class mothers are more flexible. In recent decades, there is a noticeable convergence of child-rearing trends between the classes -- however differences are still evident (Bronfenbrenner, 1970).

In the care and attention of the young, middle class parents appear to be more receptive to the child's emotional demands, and are more tolerant of the child's expressed needs, desires, or impulses. Middle class parents affect an attitude of acceptance and equalitarianism towards their children. They desire to instill these virtues in their children -- the eagerness to learn, the sharing of love and confidence between parent and child. Working class parents are more oriented toward maintaining order and obedience, and respect for the father as the head of the family. Working class children are taught to value neatness, orderliness, and cleanliness, conformity of behaviour, and respect for authority (Kohn, 1975). Middle class children, on the other hand, are taught to be polite, to control physical aggression, and to be responsible for their own behaviour. Great emphasis is placed on self-direction and independence. Middle class parents feel a greater obligation to be supportive of their children (Kohn, 1975).

In the area of discipline, middle class parents tend to be love-oriented, and thus react more to the intent of the child's actions. They usually resort to reasoning, withdrawal of love or privileges, appeal to guilt, and display of disappointment. This type of psychological discipline appears to be more effective in bringing out the desired behaviours in their young. The working class parents, on the other hand, largely resort to physical punishment when the child transgresses externally imposed rules. Punishment is usually a reaction to the immediate consequences of the child's actions. Working class parents place more emphasis on their obligation to impose constraints on their children (Kohn, 1975).

In sum, the differences in child-rearing practices between the two classes are rooted in their basic attitudes towards life. Their respective ways of life influence their attitudes towards how children should be raised, and what they consider to be the more desirable behaviours in children. Although the advance of time has progressively narrowed the social gap between the classes, nevertheless the overall quality of parent-child relationship has not changed dramatically in either class. The working class parents tend to follow the middle class trends in child-rearing practices. But by the time the former group has assimilated the middle class trends, the middle class parents would have moved on to newer trends. Thus, the working class has consistently lagged behind their middle class counterparts by several years (Bronfenbrenner, 1970).

Family Patterns

Besides class differences in child-rearing practices, family patterns are conspicuous indicators of social status. The family is the chief source of a child's initial experience with his/her world. Parental attitudes, values, behaviours, styles of life, and family stability all

exert considerable influence on a child's subsequent social, psychological, and intellectual development, as well as his/her evaluation of the self. The values and expectations which confront the child are usually reinforced by the family's economic conditions -- and these determine the particular life style a family would adopt.

The generally accepted image of the middle class family is one which assumes a certain level of material well-being. The emphasis is on security and comfort, and the desire to be accepted in a certain "image" ascribed to the middle class. The middle class families are usually in a better position of being able to provide a "more than average" education for their children. They regard highly the cultivation of intellectual and artistic interests and abilities. They have the tendency to strive for success in business or professional enterprises. They are more concerned with the future than the past. It is not an unusual practice for most family members to be involved in certain ritualistic behaviours which are typical of church or club members (Kohn, 1975). Most members of this class subscribe to acceptable norms in material consumption, home-making, health, sports, leisure activities, and even sexual behaviours (Porter, 1965). In the case of parent-child relationships, parents usually feel a greater obligation to be supportive of their children. The type of interaction that is engaged in is usually centred around quality rather than quantity; that is, activities which are considered to be attentive and encouraging, which promote rapid development of intellectual ability and good educational performance (Stacey, 1976). Parental attitudes towards their children could be classified as "permissive." Within the middle class family, the roles of the father and mother are not sharply differentiated (Kohn, 1975). Parents tend to share their responsibilities in disciplining and guiding their children.

With respect to residence, the middle class families tend to live in dwellings which are self-owned, and which often fit into a specific, acceptable image. That is, they are likely in a suburban neighbourhood consisting of single family units and more spacious dwellings.

The working class, on the other hand, tend to be the less fortunate members of the same society. Mayer and Buckley (1970) see their lifestyle as characterized by poverty, shabbiness of clothing, inadequate income, menial or lowly employment, financial difficulties, recurrent bouts of unemployment, and personal or family insecurity. Parents of these families are usually not in an economic position to "better" educate their children. In fact, higher (tertiary) education is not generally held in high esteem (Stacey, 1976) by parents who simply do not see the financial benefits of further education for their children.

With respect to their general attitudes towards life, the working class tend to adopt a fatalistic attitude. They recognize the absence of opportunity for initiative and self-expression as barriers to social mobility. They are more concerned with the present than the future. These families have little interest in "cultural" activities such as attendance in theatres, operas, or concerts (Mayer & Buckley, 1970).

In parent-child relationships, these parents often exercise more authoritarian and "traditional" attitudes. Within this type of family, there is a sharp contrast between the roles of the father and mother. The father is looked upon as the authority figure, the head of the household, the chief bread-winner. The mother, on the other hand, often plays a more subordinate role. She upholds traditional values and is seen as the more supportive parent (Kohn, 1975).

In regards to residence, the working class residences are usually situated in inner city areas or dilapidated neighbourhoods -- which is

often called "the other side of the tracks." Dwellings are typically run-down, overcrowded, and usually are of multi-family or low rental units.

In sum, the working class and the middle class are interested in similar things: security and the attainment of a certain standard of living. However, they differ markedly with respect to the level of these interests. The working class have to subjugate a vast amount of their personal potential in return for the desired economic outcomes. The middle class, by virtue of birth into a more affluent environment, could take for granted much of what the working class values. In addition, their basic life conditions could afford the privilege of developing personal potential. All these would have an impact on their respective lifestyle and behaviours.

Educational/Occupational Opportunities

The opportunity for social mobility in the younger citizens in a society, by and large, is still very much bound to parental economic status and the nature of distribution of educational resources. In general, occupations provide a certain amount of stability of income, economic security, and social prestige. As such, occupational status is one of the main indicators of social hierarchy. However, occupation goes hand in hand with education (Stacey, 1976). The access to certain occupational status is very much determined by past educational opportunity, which is, in turn, determined by social origins.

Kohn (1975) in his analysis of social structure, delineates the differential patterns of occupations which are class-related. In middle class occupations, there is the tendency for individuals to deal more with the manipulation of interpersonal relations, ideas, or symbols. There is also a demand for self-direction. Upward mobility or "getting ahead" has

become dependent on one's own actions (i.e., capability, diligence, qualifications, and social background). Working class occupations, in contrast, tend to emphasize the manipulations of things or objects. Workers are subjected to regulations, standardizations, and direct supervision. Upward mobility on the job is very often dependent on collective bargaining (i.e., unions) (Kohn, 1975).

The parent's social position has constraints on a child's educational opportunity, and his/her subsequent scope of occupational choice. In an increasingly sophisticated industrial society, the complex occupational structure demands and influences the form of educational resources. In theory, education in our "progressively classless" society has been considered a basic right. In reality, education has now been relegated to the role of distributor of occupational chances (Stacey, 1976), and the content of education increasingly emphasizes the marketability of skills (Porter, 1965). The right to education has become a myth -- as it caters to society's economic interests rather than to the development of the potentials of individuals. Consequently, the acquisition or the pursuit of knowledge for its own sake (as educational purists would prefer to define education) has become an unaffordable luxury! Any effort to equalize educational opportunities has been equated with the dilution of the quality of education (Porter, 1965).

Bernstein (1961), Lawton (1972), Mayer and Buckley (1970), Porter (1965), and Stacey (1976) have documented the gross inequalities in educational opportunities at the elementary and secondary school levels, and especially at the tertiary level. The most obvious social barrier to equality of educational opportunities is the inequality of income/wealth, which directly influences the type of education a child has access

to. Regardless of how "free" (i.e., financially) education is viewed as being in a democratic society, the economic circumstances of the working class often make it necessary for many students to take an alternative route to higher education. This alternative is usually the job market. It also becomes simultaneously indispensable, for the student's or his/her family's livelihood depends on it. In middle class families, on the other hand, where financial circumstance is an asset rather than a deterrent, children are often encouraged to follow the parents' footsteps in attaining a respectable level of education. Subsequently, their educational experience would enable them to be in a viable position to choose a socially appropriate profession suitable to their station in life.

Another deterrent to equality of educational opportunity is the type of schools or school programs that are available (Stacey, 1976). Present school systems tend to reflect the social and political currents of a society. Schools not only "educate" the young to fit in prospective positions in society; they also instill in them "appropriate" levels of aspiration and expectation. Schools encourage the students to be reconciled to their presumed positions in life. Durkheim's definition of education succinctly captures the educational inequality and privilege evident in capitalist societies:

Education is the influence exercised by older generations upon those who are not yet ready for social life. Its object is to awaken and develop in the child those physical, intellectual and moral states which are required of him both by his society and by the milieu for which he is specifically destined. (in Stacey, 1976, p.35)

Although Durkheim's insight into education was intended for his day, yet this type of attitude towards education still persists, and unfortunately, is not so subtly practiced in today's society. In the main, groups who

suffer the most are the ones who are of a lower socio-economic status, and who are the ethnically different individuals. By virtue of their social, cultural, or linguistic differences, they are often channeled by school authorities into the non-academic (otherwise known as vocational or "shop" classes) stream in the education system (Anisef, 1974; and Masemann, 1975). Educators are of the opinion that class and ethnic differences act as strong barriers for such individuals to assimilate into the mainstream lifestyle of the society (Anisef, 1974). Thus vocational programmes are considered as a saving grace and a viable alternative for these "misfits" to adapt within a society. A radically different way of looking at this alternative, is that this group provides the necessary means of inexpensive labour for a market economy (Djao, 1979).

Miliband (1969) further details the legitimation of the social order by school systems. According to Miliband, the system operates at three levels. First, education performs a class- and status-conforming role. Second, education is middle class oriented. Since it conflicts with the working class children's values, it thus reinforces a sense of inadequacy, and inadvertently enforces the acceptance of a subordinate position. Third, once these working class students accept their delegated positions, then the system could "adjust" them to the interests of the dominant class. This implies that adjustment will help them to recognize their dependence on a superior class for their livelihood. Miliband's analysis is very powerful indeed. His highlight of the school system as the chief culprit is perhaps a little harsh. Admittedly, school systems play an important role in the unequal distribution of educational opportunities and subsequent occupational chances. Nevertheless, the school is not the only institution which contributes to these unfortunate conditions. Other

institutions are also responsible for these circumstances, even before the child is admitted to school.

The different variables which were discussed, namely, the class and social stratification in societies; the family and its concomitant child-rearing practices; the family patterns; the educational/occupational backgrounds of the parents; and the distribution of educational opportunities, all contribute to the problems the working class child faces. Many of these problems are rooted in the basic life conditions which are unequally distributed within democratic systems. There is an unwillingness of certain sectors of society to admit to the existence of inequality of life opportunities; such a recognition would imply an admission of their privileged positions. In addition, the persistence of most people, be they middle class or working class, in the belief in "equality," has further clouded the real meaning of equality. Equality has been likened to the possession of certain material goods. The "liberal" believes in the ideology of an individualistic, highly mobile society. The "conservative" believes in the ideology of the necessity of the maintenance of a class system to help stabilize the "mass of rootless people" -- who are threatened by insecurity and competitiveness created by the liberal ideology (Stacey, 1976). Regardless of ideological persuasion, these political conceptions have helped to maintain our present class system.

The social unrests of the 1970's have ushered in changes in the predominant ideologies among social scientists. The changing trend tends to be more socially conscious in orientation. There is now a wider agreement on the existence of social inequality in societies. There is also a recognition of race/ethnicity as a barrier to social status/mobility. This trend tends to move towards a general de-emphasis of the "melting-pot"

philosophy of adherence to dominant values (Stacey, 1976). This new consciousness has unleashed a re-questioning of societal values, and simultaneously has awakened an inquiry into the issue of these various influences upon human development, and intellectual development in particular.

CHAPTER III

COGNITIVE STYLE -- HISTORICAL AND CONTEMPORARY CONCEPTIONS

Introduction

To understand the notion of cognitive style requires an investigation of the development of cognitive processes, which act as a conceptual frame of reference to examine similarities and dissimilarities in patterns of cognitive functioning. Broadly, cognitive style is seen as a "particular" way in which the human organizes his/her world. In this chapter, the stylistic constructs as developed by Herman A. Witkin and Irving E. Sigel will be presented.

Cognitive Processes -- Historical Conceptions

The Greek Tradition

The study of the human mind has fascinated humankind since the beginning of civilization. A group of Greek scholars (c. 600 B.C.) initiated a scientific investigation in order to explain rationally experienced facts. Empedocles (c. 495-428 B.C.) originated the theory of perception -- of "like perceives like." This theory was further carried on by Anaxagoras (c. 499-428 B.C.) who proposed that "perception is by opposites" or by contrasting stimuli -- in contrast to Empedocles' idea of "sameness." By the time of the Sophists, Protagoras (481-411 B.C.) identified that perceiving and thinking are interconnected. He postulated the theory of subjectivity of sense perceptions. He was also the first to formulate the Perception Theory of Personality (Chaplin & Krawiec, 1965).

It was Plato who envisioned the structure of personality as composed of three elements: the intellect, the will, and the appetite. He perceived the psyche or the soul as the unity of these activities. A harmony of

these activities produces adjustment; and a disharmony would result in maladjustment. From Plato's basic ideas on personality and psyche, the psychology of individual differences, constitutional psychology, and genetic psychology were born (Sahakian, 1975).

Aristotle, a disciple of Plato, carried on in the Platonic tradition. He introduced the psychology of sensation and perception. He conceived of the mind as a blank, a potential object for thought. According to him, all thoughts are acquired through the senses, which furnish the mind with sensations and ideas from the outer world. The Stoics who supported the Aristotelian line of thought regarded the formation of concepts as originating in perception, and the product of the reasoning faculty (Sahakian, 1975).

The Early European Tradition

The beginning of the period of Enlightenment saw a rebirth of the ideas of perception and sensation. Hobbes (1588-1679) proposed that sensations are the source of all knowledge. His conceptions are responsible for the initiation of the empiricist and associationist movements. Locke (1632-1704) elaborated on Hobbes' ideas and asserted that the infant mind is a *tabula rasa* upon which experience is recorded, and that all knowledge is derived from experience. Berkeley (1685-1753) went one step further and maintained that all knowledge is dependent upon the experiencing person. Thomas Reid (1710-1796) postulated the theory of sensation and perceptions, and made distinctions between the two. He contended that sensations are derived from the activities of the sense organs and are experienced in consciousness, whereas perceptions are dependent on sensations and carry with them an objective awareness. He posed the question of the "why" of perceptual experience which is taken up as the topic of

inquiry by two subsequent schools of philosophy of science. They are the nativism and empiricism schools, which became the two traditions of German psychology.

The German Tradition

Lotze (1817-1881) was an influential figure from the late nineteenth to the early twentieth centuries, particularly in his formulation of space perception. In essence his theory postulates that "perception of space is learned through associations of movement in space with local sensory spots which are stimulated in the course of such movements " (Chaplin & Krawiec, 1965, p.115)

Helmholtz' (1821-1894) empirical theory of perception asserts that "knowledge of the field of vision is acquired" and that its apparent innate properties are due to "accumulation of memory impressions" or unconscious inference (Sahakian, 1975, p.11). A contemporary of Helmholtz, Hering (1834-1918), in opposition to Helmholtz, was basically nativistic in his approach to the perception theory, subscribing to an innate pre-disposition of perceptual experience.

Wundt (1832-1920) postulated a theory of "apperception" which differentiates two elements in perception: a passive, pure perception without meaning; and the active apperception which is consciously comprehended from pre-existing ideas, which makes perceptions meaningful.

At this time German scholars were intellectually divided on the issue of perception. The outcome of this division resulted in two dominant modes of thinking -- the empiricist and the nativist. The followers of the empiricist -- Lotze, Helmholtz, and Wundt ascribed to associationism as the answer to perceptual meaning. Adherents to the nativist school -- Kant, J. Müller, Hering, and Stumpf ascribed to the

innate, predisposition and elements as explanations of perceptual processes.

From the Associationist School, Structuralism and Functionalism emerged. Under Titchener's (Chaplin & Krawiec, 1965) structuralism perception is seen as "images incorporated as an integral part of the whole process," and perceptions have meaning accrued from past experience and the present context of experience. Carr's functionalism defines perception as "the cognition of a present object in relation to some act of adjustment," and that perception is selective, organized and meaningful (Chaplin & Krawiec, 1965).

From the Nativist School emerged Personalistik psychology, psychometrics, the Würzburg School, and the Gestalt School. Stern, in reaction to the associationist and elementarist trends in perceptual psychology, gave prominence to phenomenology. This later gave rise to the development of Personalistik psychology. This psychology centred on the uniqueness of the human organism. Stern also pioneered the psychology of individual differences and psychometrics, which brought on a wealth of development in psychological testing. The introduction of the concepts of IQ, intelligence testing (i.e., Binet-Simon, Stanford-Binet), projective testing (i.e., Rorschach, Bender-Gestalt, TAT) are an outcome of Stern's ideas.

The Würzburg School was founded by Kulpe, with followers such as Mayer, Orth, Marbe, Watt, Ach, Messer and Buhler. The central premise of this school of thought is that the mind is capable of abstraction, and thought processes are characterized by thinking and meaning. Würzburg School espoused a synthetic, wholistic orientation, and indirectly facilitated the development of the Gestalt School.

The founding fathers of Gestalt psychology were Wertheimer, Kohler, and Koffka. This school of thought investigated the perceptual phenomenon,

that perceptual experiences are organized into meaningful wholes rather than an aggregation of sensations. An important principle of Gestalt psychology is the figure-ground principle, which became the fundamental concept in perceptual studies. Another development which was seen in the context of the Gestalt School is Lewin's field theory and topological psychology. Lewin's theory emphasized needs, will, personality, and social factors. His conceptualization of differentiation as the "complexity of units" and the "interdependence of parts" are often considered to be the theoretical basis for some later formulations of cognitive style.

From the time of the Greek philosophers, inquiry into the field of perception has gone through epistemological evolutions. Traditional, elementary ideas have given way to more complex thoughts. Successive generations of psychologists have elaborated on the historical trends and have formulated more comprehensive theories of human behaviour and personality, from the earlier investigations in perception. The zeitgeist of the 1900's has been in the study of personality. The study of personality types, individual differences, psychological testing dominated the scene in psychology both in Europe and North America (Adler, 1932; Allport, 1937; Allport & Vernon, 1931; Bender, 1938; Eysenck, 1947; Jung, 1923; Kretschmer, 1936; Lewin, 1935; Murray, 1938; Sheldon, 1927; and Stern, 1938). These precursors to the study of cognitive processes mark the end of a golden era in psychology, and helped shape the contemporary psychological construct of cognitive style.

Cognitive Style -- Contemporary Conceptions

Cognitive style is a relatively contemporary term in the field of psychology. The actual application of the term itself seems to have appeared around the 1950's. However, no specific person could be traced

to whom the coining of the term could be attributed. The general notion of style, or individual differences in cognitive processes, has flourished under the German psychologies of the 1900's, albeit under the more basic investigation of cognitive processes. From its first inception, although still very much based in perceptual processes, perception is no longer investigated as the sole aggregation of sensations. It is now considered as a part of a meaningful whole -- a synthesis of social, psychological, developmental and/or personality variables. This, evidently, is influenced by the Gestalt School. Earlier constructs dealt mainly with the issue of "personality through perception" (Blake & Ramsey, 1951; and Witkin, 1954). How one perceives or conceives of one's reality has become very much a part of one's personality dynamic. Gardner (1953), however, diverts himself from the personality domain and concentrates on the "categorizing behavior" as a cognitive style.

Since its conceptualization, the term "cognitive style" has been broadly used by researchers and theoreticians, and has been used to refer to and to encompass different dimensions of the cognitive process. Researchers from different theoretical orientations use various analogous terms (e.g., cognitive styles, cognitive controls, cognitive strategies, modes of information processing, etc.) to denote basically the same construct. The construct is thus constrained and limited by the researcher's specific orientation, be it developmental, organismic, behavioural, functional, or structural. However, regardless of the theoretical orientation, the consensus on cognitive style appears to be "a superordinate construct which is involved in many cognitive operations, and which accounts for individual differences in a variety of cognitive, perceptual and personality variables" (Vernon, 1973; p.141).

The diversity of research of this particular area in the recent decades has tended to cloud the conceptual clarity in the investigation of cognitive style. There are now as many different researchers as there are theoretical orientations, and with as many research techniques. This field has become saturated with conceptual and definitional problems. Attempts have been made to identify or classify the numerous cognitive styles that exist in the research literature. Messick (1970) has enumerated and described nine different cognitive styles. (See Table 1, from Kogan, 1971, p.246). Vernon (1973) in his review of cognitive style, identifies six different dimensions. He finds inconsistencies within the different dimensions and emphasises difficulty in confirming all the claims of cognitive style. Kogan (1976) classifies three types of cognitive style based on "veridicality" (implies superordination) in relation to the domain of abilities. In Type I -- field-dependence-independence -- in which performance which attests to the individual's style is more-or-less veridical, that is, a certain cognitive style (field-independent) is seen as superior. In Type II -- the conceptualization style -- one style is seen as more advanced than the others developmentally. In Type III -- breadth of categorization -- implies no veridicality and suggests neutrality in the styles. Type II and III appear to be rather similar, as both involve a choice or preference on the part of the individual in the task demand. The proliferation of research in the area has rendered the topic conceptually confusing. In order to attempt any clarification, one would have to revert back to the original concepts which gave rise to the construct of cognitive style.

TABLE 1

Nine Cognitive Styles*

- (1) Field independence vs. field dependence: an analytical, in contrast to a global, way of perceiving (which) entails a tendency to experience items as discrete from their backgrounds and reflects ability to overcome the influence of an embedding context.
- (2) Scanning: a dimension of individual differences in the extensiveness and intensity of attention deployment, leading to individual variations in the vividness of experience and the span of awareness.
- (3) Breadth of categorizing: consistent preferences for broad inclusiveness, as opposed to narrow exclusiveness, in establishing the acceptable range for specified categories.
- (4) Conceptualizing styles: individual differences in the tendency to categorize perceived similarities and differences among stimuli in terms of many differentiated concepts, which is a dimension called conceptual differentiation, as well as consistencies in the utilization of particular conceptualizing approaches as bases for forming concepts (such as the routine use in concept formation of thematic or functional relations among stimuli as opposed to the analysis of descriptive attributes or the inference of class membership).
- (5) Cognitive complexity vs. simplicity: individual differences in the tendency to construe the world, and particularly the world of social behavior, in a multidimensional and discriminating way.
- (6) Reflectiveness vs. impulsivity: individual consistencies in the speed with which hypotheses are selected and information processed, with impulsive subjects tending to offer the first answer that occurs to them, even though it is frequently incorrect, and reflective subjects tending to ponder various possibilities before deciding.
- (7) Leveling vs. sharpening: reliable individual variations in assimilation in memory. Subjects at the leveling extreme tend to blur similar memories and to merge perceived objects or events with similar but not identical events recalled from previous experience. Sharpeners, at the other extreme, are less prone to confuse similar objects and, by contrast, may even judge the present to be less similar to the past than is actually the case.
- (8) Constricted vs. flexible control: individual differences in susceptibility to distraction and cognitive interference.

TABLE 1 (continued)

- (9) Tolerance for incongruous or unrealistic experiences: a dimension of differential willingness to accept perceptions at variance with conventional experience.

*From Kogan, Nathan. Educational Implications of Cognitive Styles. In Psychology and Educational Practice. Edited by G. S. Lesser. Glenview, Ill.: Scott, Foresman and Company, 1971, p.246.

The Concept of Differentiation

The concept of differentiation germinated from the Gestalt School. It reflected the changing trend in biology from a mechanistic and vitalistic approach to the organismic approach of viewing the organism (von Bertalanffy, 1962). This in turn influenced the development of the concept in psychology. This is an important concept, for the assumption of differentiation in cognitive development is implicit in all the contemporary constructs of cognitive style. This assumption provides a conceptual framework for the understanding of cognitive behaviour and individual differences in cognitive functioning.

In the course of human ontogenesis, developmentalists (Kogan & Kagan, 1970; Kagan, Moss & Sigel, 1963; Lewin, 1937; Werner, 1948, 1963; and Witkin et al, 1962) acclaim the differentiation theory. By differentiation, it is meant that there is a progressive distancing and polarization between the self and the non-self. Analogically, in cognitive development, cognitive structures proceed from a less to a more differentiated state.

The Lewinian (Lewin, 1937) conception of differentiation comprises two elements: the increasing "complexity of units" and the decreasing "interdependence of parts." This complexity of units refers to the growing "specialization" and "individualization" of varieties of organs or behaviours. The interdependence of parts denotes the dependence/independence

relations of parts in the structure of the person, and the relation of the structure to the external world. Lewin's "differentiation" describes more aptly the latter concept, whereas the concept of complexity is only dealt with in a cursory manner. Further to this conceptualization Lewin proposed a "hierarchical integration" as a bridge to the decreasing "unity" of the person. As a person becomes more differentiated, a new step must, of necessity, develop in order to bring a re-organization and integration of the different structures. To Lewin, hierarchic integration follows differentiation. Differentiation and hierarchic integration thus form a symbiotic system in the course of development. Current formulations in part/whole relations, the global-diffuse versus the articulated-analytic issues in cognitive functioning found their origins in the Lewinian notion of "interdependence of parts;" whereas the issues of similarities and differences originate in the notion of "complexity of units."

Another prominent theorist on differentiation, Heinz Werner, was a follower of the Leipzig Gestalt School, which emphasized the developmental and organismic approach. Werner's orthogenetic principle of development is derived from these same principles of differentiation and integration. Briefly, his theory of development represents a developmental progression (in continuity) and transformation (in discontinuity) from the simplest of organism to the most complex of organisms -- the human being. Werner states his principle of development this way:

Whenever development occurs it proceeds from a state of relative globality and lack of differentiation to a state of increasing differentiation, articulation, and hierarchic integration. (Werner, 1957, p.126)

Werner's theory of development involves two dialectical processes: adaptive change and organizational stability. At first glance, these two processes do not appear to be complementary. On the one hand, adaptive

change implies the ongoing process of change. On the other hand, organizational stability implies the continuous striving for stability. Each one of these processes seems to negate the other. However, Werner postulated a theoretical synthesis of these processes in order to create a new order -- which produces a more comprehensive picture of development. This developmental process must, by necessity, involve the integrity of the whole organism while it is undergoing adaptation to an organized and ordered sequence of change (Langer, 1970).

Werner's (1957) construct of differentiation emphasises mainly the interdependence of part/whole, or means/end, subject/object relations. Part/whole is essentially a holistic view which states that organization is presumed to be composed of interdependent parts which compose a whole. To analyse behavioural events, one must consider the interrelationship and integration of parts to the whole. The means/end dimension assumes that organization is goal-directed, that it has directedness -- towards fulfillment, in other words, teleological. In subject/object dimension, Werner postulated a progressive distancing or polarization between the person (subject) and object of reference. For example, at the immature stage (newborn) of development, there is a primordial relationship between the mother and the child, an intimate sharing situation. Initially, the infant comes to know his/her world, his/her self, his/her feelings, only through interactions with his/her mother. Progressively by symbolic means, the infant is able to progressively distantiate his/her self from the mother.

For Werner (1948), differentiation spans three levels of cognitive functioning: the sensorimotor, the perceptual and the conceptual, with each subsequent level reflecting a higher degree of part/whole articulation

and subject/object polarization. The perceptual level of functioning is seen as more differentiated than the sensorimotor level -- which is relatively more global or less articulated than both the perceptual and conceptual levels. The conceptual level is the most advanced, where the individual is capable of "internal manipulation of symbols and abstract representations of the environment" (Kogan & Kagan, 1970, p.1284).

Werner conceptualizes a linear sequence of increasing differentiation developmentally from the sensorimotor to the conceptual phase. At the same time he recognizes the possibility of a multilinear view of development, in which the individual can vary the levels of differentiation in accordance with task requirements. This multiplicity of cognitive functions suggests the adaptive functioning of the individual to the environment.

Werner's concept of hierarchic integration is an essential component in differentiation. In hierarchic integration, as the individual proceeds in the different phases of cognitive development, each phase is presumed to become re-structured and re-organized in order to admit a subsequent, higher level of differentiation. This fits well with Werner's conception of synthesis, which binds the developmental processes together, thus providing a holistic picture to this theory of development.

The crucial points in Werner's developmental theory are his concepts of differentiation and hierarchic integration. As the organism progresses through these two important processes, it comes to "know" its world. Thus, in knowing it, the human organism moves from the animalistic reaction to his/her environment, to the human response in knowing his/her world through symbolic representation. This symbolic-knowing process transcends the organism from animal to human existence. Werner's theory is heuristic not

only in his contribution of experimental designs, but also in his development of the holistic theoretical concepts which have stimulated worthwhile empirical and experimental research into the area of cognitive style, to whom Witkin pays tribute to his work.

Witkin on Cognitive Style

The initial formulation of Witkin's and his associates' (Witkin, Lewis, Hertzman, Machover, Meissner & Wapner, 1954) construct of stylistic behaviour in individuals arose out of their conceptualization of the relation between the psychology of perception and the personality of the perceiver. This formulation relates to the various personality dynamics which are involved in the individual's perceptual processes in interaction with one's environment. Out of this extensive study emerged three instruments from which to investigate their formulations: The Rod-and-Frame Test (RFT), the tilting-room-tilting-chair test, more commonly known as the Body Adjustment Test (BAT), and the Embedded Figures Test (EFT). This earlier study was influenced by the Gestalt School. Projective tests, together with the concomitant empirical investigations, raise two prominent questions in the field of "personality through perception," namely, stability of self-consistent modes of orientation in differentiation, and individual differences in perception.

Witkin's study on "personality through perception" is the basis of a more comprehensive formulation -- the concept of psychological differentiation. In this latter formulation the influences of Kurt Lewin (Gestalt Field Theory) and Heinz Werner (Organismic-Developmental Theory) are evident. The basic premise of Witkin's differentiation theory is that there is the manifestation of differentiation tendencies in broad dimensions of personal functioning -- as in body concept, nature of self, defensive

structures -- and in cognitive functioning -- as in perceptual and intellectual abilities (Witkin et al, 1962; and Witkin & Berry, 1975). In other words, differentiation refers to "...the complexity of a system's structure. A less differentiated system is in a relatively homogeneous state; a more differentiated system in a relatively heterogeneous state" (Witkin et al, 1962, p.9). This conception does not differ from either Lewin's or Werner's.

Witkin's theory also refers to specialization in a highly differentiated system. For example, in humans, it implies specialization in the individual's whole system, be it biological or psychological. Specialization is further extended into specificity in each separate domain, as feeling from perceiving, thinking from acting (Witkin et al, 1962). The system as a whole and in its specificity is in constant interaction with its environment. It is dynamic in nature. It involves various ways of experiencing and behavioural patterning in terms of cognitive functioning.

In the construct of psychological differentiation, Witkin attributes to this system characteristics of openness and continuity with the environment. Inherent in this system is the reciprocal component of integration. Integration refers to the patterning of the system and the patterns of relationships between the system and its environment. There are two characteristics to integration: complexity and effectiveness. Complexity of integration is directly related to the level of differentiation, specifically in reference to the relationships, stated earlier. Effectiveness of integration refers to the harmonious synchronization of the system internally, and with its environment. This is not related to the level of differentiation.

Witkin (1962) further defines the psychological system into the more differentiated and the less differentiated states. In the developmental continuum, differentiation proceeds from the less to the more differentiated. Inherent in this process are specialization, segregation, complexity, and effectiveness of integration.

In the less differentiated state, as characterized in the early stages of development in infancy, the term global is used to describe a type of experience. In the global dimension of psychological differentiation, the individual is in a diffused state in regards to the self and the non-self. He/she experiences embeddedness of the self in its surroundings, and in the field of experience. There is little attempt to disembed the self or items from the background, to re-organize, or to structure the field of experience. Experience is influenced by the immediate context of the field. Experience of the self and its environment is "mainly as a more or less amorphous, continuous 'mass'" (Witkin et al, 1962, p.12).

In the more differentiated state, the formation of the self develops: there is a separation and segregation of the "inner core" of experience from the field or environment. In the area of experience, the inner core becomes the source of experience, and experience becomes relatively analysed and structured. The individual who experiences in the "articulated" fashion has the tendency to analyse experience, that is, to perceive the self and objects as distinct from the field. The individual also structures experience, that is, organizes the field when it is perceived as having relatively little inherent structure.

The domain which has generated scores of both theoretical and empirical studies from Witkin's construct of differentiation is the perceptual

domain. The instruments for measuring this domain are the RFT, BAT, and EFT. This domain demands from the individuals a type of cognitive ability in perceptual operations. This ability in a perceptual operation is called "field-dependence-independence" style. In the field-dependent perceptual mode, perception is dominated by the organization of the surrounding field, and parts of the field are experienced as fused with the field. In the field-independent perceptual mode, perception is not influenced by the field. Parts of the field are experienced as discrete, that is, the figure is disembedded from the ground. Witkin et al (1971) further suggest the extension of this perceptual stylistic tendency into the intellectual domain and has designated it as the global/analytic dimension of cognitive functioning. In this extended domain, the extent of differentiation is seen in the individual's tendency to experience items as separate from the context in problem-solving tasks. The extension from the perceptual to the intellectual domain is now complete, and the new concept of "cognitive style" is created. Witkin has painstakingly constructed a theory of differentiation, substantiated with rigorous experimental studies. It is in his latter formulation -- the formulation of the intellectual domain in cognitive functions -- that the strength of his formulation falters. The lack of research evidence in the latter category has seriously weakened his conceptualization. It is simply not sufficient to substantiate a theory based on weak theoretical assumptions or conjectures.

Although empirical studies supporting Witkin's construct of psychological differentiation are numerous and substantive, the majority of this evidence is related to the perceptual domain and the body concept domain. Evidence which supports the intellectual domain -- or cognitive style -- is incorporated too hastily (Goodenough & Karp, 1961; and Karp, 1963).

The general lack of empirical evidence in this regard makes Witkin's concept of cognitive style questionable.

A heuristic side of Witkin's construct is in its cross-cultural application. This type of application could provide continuity of cultural universality and identify culturally unique variables of cognitive patterns across cultures. Witkin and Berry (1975) have identified dimensions relevant to cross-cultural investigation in the concept of differentiation: sex differences, age changes, and under the rubric of social influences (family practices, child-rearing, mother-child interactions), cultural factors, and acculturation changes.

The dimension of sex differences in the construct of differentiation is rather controversial, as there are studies which support or reject such a claim. For example, in migratory, hunting and gathering populations, sex differences found in the studies utilizing the EFT and BAT are non-significant (Berry, 1966; 1971; MacArthur, 1972;1973;1974). However, in sedentary or agricultural populations, there is a greater frequency of sex differences (Chandra, 1974; MacArthur, 1974; Mitchelmore, 1974; and Okonji, 1974). Witkin and Berry (1975) state that although there is a persistent pattern of sex differences between sexes in Western studies, the magnitude of this difference is noticeably small. There appears to be a trend around age four onwards, but not a regular trend prior to adolescence or thereafter. And cross-culturally, sex differences appear as an apparent pattern, but not a significant pattern. The trend or pattern indicates that males are more field-independent than females. These studies recommend caution in the interpretation of the findings.

In the dimension of age, researchers (Berry, 1966; Fernandez-Davila et al, 1966; Kagan & Klein, 1973; MacArthur, 1974; Witkin & Berry, 1975)

studying children of different age groups and from a variety of nationalities denote a clear developmental sequence in differentiation. In the perceptual domain, utilizing the EFT or similar instruments, there is consistent increasing progression from field-dependence to field-independence from the younger age to the adolescent, older age levels. These findings support strongly the underlying assumptions of the theory -- that developmentally cognitive functions progress from the global to the articulated.

Under the broad category of social influences, several factors are investigated. Various researchers have found significant correlation between family/child-rearing practices, or mother-child interaction, and psychological differentiation -- in the form of EFT. Dawson (1973) and Dawson, Young and Choi (1974) studied Hong Kong Chinese boys; Dyk and Witkin (1965) studied 10-year-old boys; MacArthur (1970; 1971) studied Igloolik Eskimo children; and Mebane and Johnson (1970) studied Mexican children. Together with Witkin's (1969; 1975) extensive review of the topic, they all support the relationship between family or child-rearing practices and the development of field-dependence-independence, with authoritarian families correlating with field-dependence, and autonomous and independent-oriented families correlating with field-independence.

Another dimension of social influences consists of the economic factors. Berry (1969) investigated the relationship between economic factors and the concept of differentiation and found that economic factors are related to socialization practices. This study is based on "low food accumulating" societies and "high food accumulating" societies in which the latter group is found to be more compliant, and field-dependent. Further study of the influence of economic factors on differentiation is

needed before any definitive statements could be made. Studies on socio-economic status both within and across cultures would be particularly helpful.

Cultural factors, another dimension which affects the development of differentiation, is widely investigated in cross-cultural studies. This dimension is very much related to, and at the same time dramatizes, the patterns of socialization both within and across cultures. In an extensive study by Witkin, Price-Williams et al (1974), they examined the variable of "social conformity" within and across cultures (Holland, Italy and Mexico). In each country, a pair of contrasting villages are selected based on their relative emphasis towards social conformity. It is found that there are significant differences in the measure of differentiation between villages in the three countries. Dawson (1969; 1971) compared two Hong Kong Chinese groups -- one, the Boat people who are fishermen; the other the Hakka who are farmers, and found differences in their modes of cognitive style. MacArthur (1972) compared a Canadian Eskimo hunting sample with a Zambian Nsenga agricultural sample. Again, as in previous studies, differences were found between these groups, with field-independence favouring the mobile hunting group. Dershowitz (1971) compared the cognitive style of New York City Jewish boys from strict orthodox backgrounds with boys from assimilated Jewish and White-Anglo-Saxon-Protestant families, and found that the orthodox Jewish boys were significantly more field-dependent than the others. The above studies pertaining to cultural factors both within and across cultures suggest that culture *per se* is limited in the investigation of variations of cognitive patterns. Socialization practices within and across cultures are another important factor which would need to be considered in order

to present a more comprehensive understanding of this whole issue.

Witkin, Price-Williams et al (1975) suggested that the level of differentiation is a consequence of adaptation to acculturation processes. As cultures progress from migratory to sedentary, or from pastoral to urbanized, or from illiterate to educated statuses, their mode of differentiation also changes accordingly to suit their new environment. Wober (1966) found significant correlations of education with the EFT. MacArthur in his extensive research (1972; 1973; 1974; & 1975) also found a correlation between education and differentiation scores in his Eskimo and Nsenga samples, and suggested that the use of a second (Western) language has some relation to the change in the level of differentiation. These studies suggest significant implications: as cultures become more educated and technological (both of these in the Western sense) the mode of cognitive style has also made adaptive changes to be more field-independent. Does this suggest that the test instruments used to investigate this construct of differentiation are more suitable to the Western-oriented type of setting, and therefore appear to support a certain mode (the Western) of cognition as being of a "superior" level? This question remains to be investigated.

With regard to the variable of social influences, the field-dependence-independence dimension is investigated in bilingual studies. These studies (Bain, 1975b; and Lambert, Tucker & d'Anglejan, 1975) have utilized the EFT or CEFT in conjunction with other instruments, in order to note the effects of bilingual experience on cognitive flexibility. These studies suggested that bilingual individuals, when compared with unilingual individuals, perform significantly higher in the field-independent mode. These studies also suggested that certain types of socio-linguistic

experience influence the development of the individual's cognitive flexibility -- that is, deliberate as opposed to determined choice.

The weakness of these studies is that only middle class children are involved, which is a factor insufficient in explaining fully the socio-linguistic differences. Another question arises as to what is meant by "cognitive flexibility"? Is this concept based on a perceptual measure?

Another important area of cognitive style research which has barely been touched upon is the relation of a stylistic concept within the higher mental processes, as in higher order intellectual ability or hierarchical conceptualization. MacArthur (1975) has reported studies done on several ethnic groups (Inuits, Canadian Indians) whose cognitive style performance (in terms of spatial field-independence) is relative to average Western White counterparts. However, in terms of "verbal-educational group of abilities" -- as in inductive reasoning from non-verbal stimuli -- these ethnic groups show considerable weakness in comparison to their White counterparts. Berry (1972) in his study of Eskimos in Northern Canada found that this northern sample's performance was relative to their Western White age-mates in terms of perceptual skill (field-independence). In conventional intelligence tests, as in the Piagetian-type tests, particularly in the area of "attainment of superordinate cognitive categorization," this sample performed lower than their Western White age-mates. This study has very serious implications in terms of conceptual clarity as to what constitutes cognitive style. Do certain modes of perceptual functioning relate to, or generalize to, other domains such as the intellectual domains? What are the potentials of "success" of these cultural minorities in their general cognitive functioning when they are placed within a dominant (foreign) culture? These questions are yet unanswered.

In sum, Witkin's theoretical and empirical contribution to the psychological differentiation of cognitive style has been reviewed in detail. There is no question that Witkin's conceptualization has provided a heuristic base from which a vast amount of research has been generated. Witkin has contributed in a mammoth way in this area. He has offered a relatively sound theoretical model and excellent research paradigms. However, the evidence tends to support only the body percept (RFT, BAT) and the perceptual style (EFT). There is as yet not enough research evidence to support his claim of a "cognitive style," which is construed from the perceptual domain, and then seen as an extension to the cognitive domain of field-dependence-independence, which is then labelled the global and analytic cognitive style. Witkin's claim in the premise that the perceptual and intellectual domains are functionally united is tenuous. Moreover, the nature of the dynamic between these two processes has not yet been fully explicated (See, Kurtz, 1969). Witkin's construct of cognitive style involves an activity of disembedding specified parts from an organized whole in the perceptual domain. This activity demands of a cognizer a particular type of perceptual ability, and not a higher intellectual activity as in the formation of a concept. That this particular perceptual mode of functioning correlates with a consistent intellectual mode, however, requires further rigorous investigation. As it now stands, Witkin's construct appears to be researcher cum context specific, and is quite distinctive from other constructs of cognitive style. Cross-cultural and bilingual studies have indicated that Witkin's style of field-dependence-independence continuum, is related to social, cultural and linguistic factors. On the other hand, Berry's (1972) study has indicated that stylistic behaviours might not necessarily relate to higher

cognitive functions. All the related reviews have contributed to the question raised by this author, namely, the need for conceptual clarity in the construct of cognitive style.

Sigel on Cognitive Style

Like his contemporary Witkin, Sigel's theoretical construction is also influenced by the works of Gestaltists -- Koffka in particular, and the organismic theoreticians Werner and Goldstein. However, a considerably different understanding of cognitive style is offered by Sigel. His theoretical and empirical conceptualization of the stylistic construct arises from his own investigations of developmental trends in the abstraction ability in children (Sigel, 1953); and later from the theoretical conceptualization of cognitive style in collaboration with co-researchers Kagan and Moss (1960; 1963).

Sigel's (1953; 1954; 1961) formulation of general cognitive development follows Werner's developmental model, from the sensori-motor to perceptual to conceptual. Sigel designated the sensori-motor level of the young infant as perceptual. At the perceptual level the immature individual operates at a less differentiated and global manner. That is, in perceptual operations the young person would "yield to the demands of the situation and the organization of the material is determined by the nature of the stimuli as well as by the limited maturity of the subject" (Sigel, 1953; p.131). On the other hand, at the conceptual level, the individual exercises a more conscious and deliberate behaviour in cognitive demand situations, that is, he/she would classify materials into more abstract categories. This mode of operation is characterized as the more differentiated and articulated mode. In the development of conceptual thinking, this orientation recognizes an important element -- language.

Here, the role of language as a symbol mediates the formation of a concept. The word provides a name, a label for a group of stimuli, a designation by which to identify or classify different objects. This conception is strongly reminiscent of Werner's ideas (which is absent in Witkin's formulation), and substantially strengthens the formulation of Sigel's construct.

In the development of the perceptual domain of cognitive behaviours, according to the Kagan group (1963), the younger four-year-old child would more likely react to stimuli-as-a-whole, globally; whereas an older nine-year-old child would tend to take account of the whole as well as the internal parts of the stimulus array, analytically. According to Sigel, in the conceptual domain, cognitive behaviours involving the definition of concepts (as in classification of similar objects) are seen as being dependent on perceptual attributes; the same developmental trend among children is evident. It is important to note the relationship between the perceptual and conceptual processes as construed by Sigel. He readily gives the impression in his writings that the two processes are not only inter-related, but that conceptual cognitions are based upon *a priori* perceptual cognitions. He further insists that conceptual processes are initially global and over-generalized. For the younger child, he/she is incapable of integrating attributes to form a concept. Concepts which are formed at this stage are mostly fragmented sub-concepts. Then the whole process advances to the more specific level, where the older child can combine larger numbers of attributes into a single, integrated concept. This integrated concept is usually abstract in nature. According to this theoretical orientation, the constructs of differentiation and abstraction occur simultaneously in cognitive development. Sigel

empirically verifies that children have consistent styles of forming concepts. Moreover, he offers only descriptive support for the premise that conceptual processes are dependent upon perceptual processes, and that the two domains are in tandem.

In other words, the works of Kagan, Moss and Sigel (1960; 1963) deal mainly with the conceptual style. They have done considerable work on examining the relationship between conceptual style and personality variable (in impulsivity-reflectivity, and with other instruments such as the Rorschach and figure-sorting), but have done little work in the domain of perception. Hence, it is somewhat inconsistent for them to formulate their version of cognitive style as "stable individual preferences in mode of perceptual organization and conceptual categorization of the external environment" (Kagan, Moss & Sigel, 1963; p.74). This perceptual domain of the construct is questionable and requires more clarification.

A distinguishing feature of the Sigel construct of cognitive style is the individual's preferential mode, as expressed in his/her response to a conceptual task. The response is not the prescribed answer to the task, but is merely one of the individual's available alternate answers. This feature is in counter-distinction to Witkin and other theoreticians who see the individual's task as having a prescribed answer, and variations on the answer are representative of points along a continuum of stylistic answers. Another distinguishing feature is the emphasis on the use of stimulus cue properties as a delimit for types of response to classes of stimuli (Sigel, Jarman & Hanesian, 1967). They were especially concerned with the particular aspects of the stimuli which are selected for grouping, as well as the characteristic ways these stimuli are organized. Out of this latter body of work, Sigel (1967) constructed his own research

instrument -- the Sigel Cognitive Style Test (SCST), which purports to identify three distinct styles of categorization: descriptive, relational-contextual, and categorical-inferential.

The descriptive style refers to concepts derived from direct reference to physical attributes of the stimulus object which are readily observable. Subsumed under this style are two sub-categories: descriptive part-whole and descriptive global. Descriptive part-whole refers to the response preference to analyse and differentiate the components of the stimulus complex. This style appears to be very similar to Witkin's field-independent dimension. Descriptive global represents the response to global aspects of stimulus or to the stimulus-as-a-whole. This style is reminiscent of Witkin's field-dependent dimension.

The relational-contextual style refers to concepts based on the thematic, geographical, temporal, comparative, or functional relationships of the stimuli. Sigel noted that in this particular category "no stimulus is an independent instance of the concept" (1967, p.5). Concepts are formed based on the interdependent function of the stimulus.

The categorical-inferential style denotes the classification of stimuli based on instances or characteristics which are not readily observable, namely, the use of class or taxonomic labels and inferences. The difference between the descriptive-part-whole and the categorical-inferential seems to be that the latter is superordinate to the former. On the one hand, the descriptive-part-whole style requires the individual to select "similar objective elements" and use a descriptive label. On the other hand, the categorical-inferential style is based on non-factual, or non-concrete information, in which a more abstract category is involved. The individual is required to abstract common elements which may not be

readily seen from the stimuli, and applies a more inclusive label on these elements. Subsumed under the categorical-inferential style are subjective elements perceived by the individual from the stimuli, and these elements could be given inferred attributes or even affective labels, depending on individual choice. Categorical-inferential style implies a more comprehensive "category," "class," or common characteristics, and at the same time infers "moral," "aesthetic value," or "judgment" aspects.

Researchers (Chiu, 1972; Coop & Sigel, 1971; Cohen, 1969; Davis, 1971; Davis & Lange, 1973; Gray, 1974; Gray & Knief, 1975; Hess & Shipman, 1965; Kagan, Moss & Sigel, 1963; Sigel, Anderson & Shapiro, 1966; and Sigel, Jarman & Hanesian, 1967) have found a number of variables which influence or are related to these particular modes of cognitive style. Some of these variables are: sex differences, age differences, social class and cultural differences, IQ, education and school achievement, and personality correlates. These variables, to greater or lesser degrees, correlate with either the descriptive, relational-contextual, or categorical-inferential style.

In the variable of sex differences, Kagan et al (1963) found higher instances of non-analytic (i.e., relational) responses in boys than in girls. They suggested that motoric impulsivity in boys could be a factor in this type of response. However, in a later study, (Sigel, Anderson & Shapiro, 1966) it was found that sex differences do play a role in the ability to classify. In middle class children of both sexes, it was found that girls produced more scorable responses than boys, and significantly more descriptive and less relational labels. In another study (Sigel, Jarman & Hanesian, 1967) on preschool children, it was again found that there are sex differences in the descriptive style, that boys

show a greater rate of increase than girls in this particular style. However, in the categorical-inferential style, girls show a greater increase than boys, suggesting that competence in this style of classification could be a product of linguistic sophistication. Here, the authors are suggesting that girls tend to have higher linguistic ability than boys. Their research data indicated that the categorical-inferential style is significantly associated with verbal and performance IQ for boys, and a trend only for girls. This empirical evidence has raised conceptual questions in their study. Are there real sex differences in terms of style, or are these differences based on linguistic ability? Chiu (1972) and Davis (1971) on the other hand found no sex differences in their respective studies. The whole issue of sex differences as presented by these different studies have yielded controversial data. Perhaps a way out of this conceptual confusion would be to consider other variables such as age, socialization practices, social class, and their interaction with sex, and thus provide a more comprehensive picture on this issue.

In the dimension of age, researchers generally agree to a developmental trend. Kagan et al (1963) noted a linear development -- an increase in analytic responses (as in descriptive and categorical-inferential) and a decrease in non-analytic (as in relational-contextual) responses with age. The same trend was replicated in a later study by Sigel, Jarman & Hanesian (1967). All these confirm the existence of a developmental trend.

The dimension of intelligence (both verbal and non-verbal) and school achievement was also studied in relation to cognitive functioning. There is a general consensus (Coop & Sigel, 1971; Gray, 1974; Sigel, Anderson & Shapiro, 1966; Sigel, Jarman & Hanesian, 1967) that descriptive, categorical-inferential styles are positively related to IQ, and that relational-

contextual style is negatively related to IQ. Cohen (1969), however, suggested a different interpretation of the relationship between intelligence and cognitive style. She insisted that when "styles used between individuals and groups are mutually incompatible, culture conflict may exist " (p.841). According to Cohen, a particular cognitive style may not represent a correlation with IQ; rather, it represents socialization practice. Her insight in this domain has provided heuristic considerations, ideas that have not been considered by other researchers.

The dimension of social status was also investigated. Differences were found between children from different social classes (Hess & Shipman, 1965; Sigel, Anderson & Shapiro, 1966). Sigel et al's study found that children of middle class backgrounds produced more scorable answers, more descriptive responses, followed by relational-contextual, then categorical-inferential responses. On the other hand, children of lower class backgrounds produced less scorable answers, gave more relational-contextual responses, followed by descriptive, then categorical-inferential responses. From this pattern of cognitive performance, the authors suggested that the lower class children have less ability to objectify and less ability to deal representationally with materials. Hess and Shipman (1965) found socio-economic status differences in verbal and cognitive performance among children. They suggested that the understanding of these differences could include the following factors: early childhood socialization, quality of cognitive meaning in mother-child communication. They proposed that growth of cognitive processes could be positively or negatively related to family control systems -- which could enhance or constrict alternatives of action and thought. In other words, one should consider how the structure of social system and the family implicate and shape the

processes of communication and language, and how language in its turn shapes thought and cognitive style, in problem-solving situations.

Chiu (1972) in a cross-cultural study, has presented a contrastive picture of cognitive style between Chinese and American children. American children tend to score higher in the descriptive-analytic and categorical-inferential styles, whereas Chinese children tend to score significantly higher in the relational-contextual style. This particular finding suggests that cognitive style could be an artifact of culture. Another cross-cultural study on cognitive style and maternal attitudes presents a different finding from Chiu's. In this study (Bain & Yu, 1979) it was found that among the Hong Kong Chinese and the Anglo-Canadian children, from both the middle and working classes, socialization practices and consequent cognitive style seem more attuned to social class differences than to cultural tradition. This latter study questions the notion of cognitive style and what it constitutes. It suggests that in future studies on the topic, perhaps researchers should take into account differences beyond culture, and include social variables such as social structure, child-rearing practices, cultures in contact, acculturation processes, and biculturality.

In sum, Sigel's version of cognitive style purports to involve both perceptual and conceptual domains of cognitive processes. However his empirical evidence pertains only to the latter domain. He devised a cognitive style test which distinguishes three stylistic types: descriptive, relational-contextual, and categorical-inferential. In contrast to Witkin's field-dependence-independence continuum, these respective styles are seen as discrete, preferential modes by which individuals approach various classification tasks. Unlike the cognitive demand of Witkin's

EFT, where there is a "right answer," the SCST demands the ability to classify where there are no right answers, only ones which would reveal consistent modes of responding. Sigel's formulation and experimental instrument provides an insight into the conceptual domain of cognitive style. The question whether this conceptual style is inclusive of a perceptual style still remains unanswered. Furthermore, theoretical and experimental work is necessary to render all of Sigel's style categories concise. And, ultimately, an integration of Sigel's specific insights with those of Witkin's could perhaps provide a more comprehensive understanding of what constitutes cognitive style.

CHAPTER IV

SYMBOLIC-MEDIATIONAL ORIENTATION TO COGNITIVE DEVELOPMENT

A THEORETICAL CONCEPTUALIZATION

Introduction

This chapter will attempt to define broadly cognitive development. It will also attempt to trace the theoretical conceptualization of cognition from a particular perspective, namely, the symbolic-mediational perspective. It is assumed that the latter perspective will provide a broader understanding of the process of human cognition. Essentially, this chapter argues for the adoption of such a position; a position which will also take into account other relevant elements (such as language) in the formation of cognitive functions.

Cognitive Development -- Theoretical Considerations

Cognitive development usually refers to the progressive development of different processes (from sensori-motor to perceptual to conceptual--see, Werner & Kaplan, 1963) in infancy, which culminate in the acquisition of knowledge and the ability to utilize this knowledge in problem-solving situations. There are myriads of orientations in the study of cognitive development. Some of the more prominent ones are: Piaget's structuralist orientation; Freud's psychoanalytic orientation; the behaviourist or S-R orientation; the social learning orientation; and the symbolic-mediational orientation. To be consistent with the thematic orientation of this thesis, theories which would include the holistic, developmental, as well as the symbolic-mediational aspects in the understanding of human cognition will be considered. A review of the historical insights into the problem of the relation between language and cognition reveals the developing trends as well as strengths and weaknesses of different theoretical models.

They form a basis of analysis from which a general position on the formation of human cognition will be developed.

Symbolic-Mediational Orientation -- Historical Conceptions

Schaff (1973) in a philosophical work on language and cognition, has critically examined this problem. The evolution of any idea or philosophy, according to Schaff, must either undergo "clashes with rival schools of thought" (Marxist) or generate from a critical analysis and elaboration of an existing idea, before a position is ultimately adopted. Each idea is subjected to such a procedure, before it is formulated. The problem of the relation between language and cognition is no exception.

Language has been variously defined in an earlier chapter. Its mediating role has been alluded to, although not explicated. The problem of language and cognition has been studied historically, and was first traced to the German philosopher Herder. Herder (1969) traced the origin of language and conceptualized it as a necessary "invention", in order that humans could use it for reflection -- that is, thinking. From this conceptualization he examined the active role of language in the human cognitive process. The gist of Herder's thesis is eloquently summarized by Schaff:

Language is not only an instrument; it is also a treasure house and a form of thinking. It is a treasure house because the experience and knowledge of generations are accumulated in language, and it is a form of thinking because these are transmitted through language to the next generations in the process of upbringing. We think not only in some language but also through the intermediary of some language; that is what we mean by saying that language is a form of our thinking. Hence the point is that language molds and, in a way, restricts the mental process. The mold consists of the native language, which is an accumulation of the knowledge of a given nation, knowledge that corresponds to that nation's experience, living conditions, and character. Language is "a form of science, a form not only in which but also

in accordance with which, thoughts are shaped." In the process of upbringing we come to know ideas through the intermediary of words. We think in a language. Thinking is nothing but speaking. Hence every nation speaks the way it thinks and thinks the way it speaks. The language of a nation fixes its experience and the various truths and falsehoods which the language transmits to coming generations, and thus the language molds their vision of the world. "The three goddesses of human knowledge -- truth, beauty, and virtue -- have become as national as language. (Schaff, 1973, p.9)

In essence, Herder's thesis states that language shapes or forms one's *Weltanschauung*. The notion of *Weltanschauung* was subsequently adopted by Wilhem von Humboldt. From *Weltanschauung*, von Humboldt extended it to *Volksgeist*, both of which are embodied in language, from an individual level to a national level. Von Humboldt's conception of the *Volksgeist* is as follows:

The peculiarity of the spirit and the structure of the language of a nation are so intertwined internally that if we have one we can deduce the other from it. Language is also an external manifestation of the spirit of the nations. Language is their spirit, and their spirit is their language. Their identity can never be sufficiently expressed. (in Schaff, 1973, p.13)

Von Humboldt's formulations are not based on Herder's conception of *Weltanschauung* alone. His acknowledgement of the dual or dialectical nature in the problem of language and cognition stems from the works of Kant and Hegel. Both the Kantian and Hegelian traditions accepted the existence of the objectivity of the world-of-objects or things-in-themselves as external to cognition-subjectivity (Schaff, 1973). For von Humboldt there is the relationship of language, thinking and reality:

Owing to the interdependence of thinking and speech it is obvious that languages are not only the proper means of presenting truth already known, but also help reveal truths yet unknown. Their variety is not a variety of sounds and signs, but a variety of *Weltanschauungen*. Here is both the foundation and the ultimate goal of all research on language. The sum of that which is

knowable, as the field cultivated by the human spirit, is situated between all languages and independently of them. Man cannot approach that purely objective territory except in a manner proper to his cognition and experiencing, and hence in a subjective manner. ...But the subjectivity of all mankind is once again something objective in itself. The original agreement between the world and man, on which the possibility of any cognition of truth is based, is acquired by following the footsteps of the phenomenon, step by step, gradually. (in Schaff, 1973, pp. 17-18)

Inherent in this Humboldtian notion of language and cognition is the dialectics of subjectivity/objectivity. Language plays an intermediary role between the external world and cognition. At the same time it shapes cognition. With language the world is transformed from a chaotic mass to an ordered product of the spirit (von Humboldt, 1969). In other words, language constructs the world for the individual, as well as determines one's *Weltanschauung*. The Humboldtian philosophy of the "active" role of language in cognition has influenced subsequent developments in this area of German Philosophies of the late nineteenth and early twentieth centuries. This philosophy even gained acceptance outside of the German national boundaries and was incorporated in Russian and American studies.

Although Herder had an influence (*Weltanschauung*) on von Humboldt, the Humboldtian notion is better known. The concepts of *Weltanschauung* and *Volksgeist* are usually attributed to the Humboldtian philosophy. This philosophy of language attributed an all-important role to language in the formation of the *Weltanschauung*. Language, with its inherent power to form the *Weltanschauung* is characterized as having an "inner form" or a dynamic force of its own -- one that is independent or objectively external to the human. Humboldt (1969) referred to language as an *energeia* which houses the *Weltanschauung*. As such, language plays a

very active role indeed. It is elevated to the status of a living form! The individual, on the other hand, is relegated to the role of a passive receptor of language and its concomitant embodiments. This conception of language neglects the dynamics of the individual in the use of language. That is to say, language is never used in isolation, it is always used within context(s). The Humboldtian view of language and cognition views the individual as an instrument of language, and not vice versa. Language *per se*, without its user, and exclusive of the manner and the "how" it would be used, would be meaningless. It would just be an artifact. In other words, the user of a language is logically the active agent. The user would then consciously formulate thoughts and organize his/her world through the instrument of language. Thus, language is a tool, waiting to be incorporated into the human cognitive processes. This type of a conception would be more propaedeutic in explaining the different intricacies of the relation between language and cognition, and what comprise the cognitive outcomes of individuals who grow up under different linguistic, cultural and social circumstances. This latter conception places the human as the chief actor in the language and cognition dynamic, and is expounded in the works of Ernest Cassirer.

Symbolic-Mediational Orientation -- Contemporary Conceptions

Cassirer, a neo-Kantian, rejected the Kantian view of the "copy theory" -- that is, "the world is reflected in consciousness as in a mirror" (Schaff, 1973, p. 31). To Cassirer, the act of cognizing is more than the mere reflection of the objective reality. According to Cassirer, cognition:

...does not reproduce a pattern already given in an object, but implies an original act which created that pattern. Hence cognition never is simply a copy, but always expresses the original creative

force. The intellectual images of the world, which we get in cognition, in art, or in language, are, to use Leibniz's words, "living mirrors of the world." They are not simple receptions and passive recordings, but acts of the mind, and each of these original acts draws a specific and new image for us and outlines the horizon of the objective world. (in Schaff, 1973, p.30)

The neo-Kantian school of thought attempted to purge the weaknesses and solidify the strengths of Kant's theory. In accordance with this school of thought, Cassirer disagreed with the Kantian conception of the objectivity of the world-of-objects; but agreed with the Kantian notion that cognition is a construction of the mind. Cassirer (1944) also attempted to modify the Kantian conception of language and cognition, by bringing the problem from the abstract (i.e., rational:reason) level to a more concrete (i.e., emotional:feeling) level. For Cassirer, to truly understand human nature, and specifically human cognition, it is insufficient to investigate the problem by means of rational philosophy alone. He proposed to extend beyond the realm of ideas and reasons into the different realms in which the human exists -- particularly the symbolic/cultural realm. By doing so, Cassirer removed the human from the *animal rationale* existence to the *animal symbolicum* existence. This movement places the human in the exclusive and distinct world of civilization and culture.

With the formation of symbols relevant to one's world and the concomitant rise of culture, Cassirer cautioned that now the human would be encapsulated in this symbolic world of his/her own creation. He elaborated on the notion of human encapsulation:

Man cannot escape from his own achievement. He cannot but adopt the conditions of his own life. No longer in a merely physical universe, man lives in a symbolic universe. Language, myth, and religion are parts of this universe. They are the varied threads which weave

the symbolic net, the tangled web of human experience. All human progress in thought and experience refines upon and strengthens its net. No longer can man confront reality immediately: he cannot, as it were, see it face to face. Physical reality seems to recede in proportion as man's symbolic activity advances. Instead of dealing with things themselves man is in a sense constantly conversing with himself. He has so enveloped himself in linguistic forms, in artistic images, in mythical symbols or religious rites that he cannot see or know anything except by interposition of this artificial medium. His situation is the same in the theoretical as in the practical sphere. Even here man does not live in the world of hard facts, or according to his immediate needs and desires. He lives rather in the midst of imaginary emotions, in hopes and fears, in his fantasies and dreams.

(Cassirer, 1944, p.25)

As the symbolic world advances, the human capacity of confronting realities in an immediate, emotive manner recedes more into the background. In time, humans come to rely on this world of their own making for their existence. It provides them with meaning, substance, as well as a way of life. Here, Cassirer's conception of the symbolic world can be traced from the Humboldtian concept of *Weltanschauung*. Where Humboldt's concept was cursorily developed, Cassirer's was thoroughly developed, "purified of inconsistencies" (Schaff, 1973). Cassirer brought the focus of the problem from an idealistic to a more human level, which comprises both the emotional and symbolic/cultural realms. This extension is a recognition of the limitations of previous conceptions of the problem of language and cognition. The rebirth of an old idea in a Cassirerian formulation has two central points: one, the inherent potentials of the individual in a symbolic world; and two, the constraints of this same symbolic world on the individual.

The implications of Cassirer's philosophy of symbolic forms and the conception of *animal symbolicum* are many. First, cognition is no longer

seen as a mere reflection of the external world-of-object. It is now seen in the light of "consciousness" of the cognizing subject. This latter version places the active role of cognition in the individual, who now becomes the creative actor in the act of cognition. Second, the notion of the symbolic world does not just apply to the world of abstract ideas alone, it also implies the worlds of feelings, myths, religions -- that is, the world of human culture. Third, Cassirer's inclusion of a symbolic/cultural realm to human existence has greatly extended the understanding of human cognition. However, Cassirer the philosopher could only add insights, albeit very relevant insights, to the problem of language and cognition, on the philosophical and theoretical levels. To bear out these insights, one would need to turn to scholars who ascribe to such ideas and simultaneously conduct rigorous empirical investigation which translates the ideas in more practical terms.

In sum, the contemporary lines of thought were generated from the old Humboldtian notion of *Weltanschauung*, and had evolved from different theoretical perspectives. For example, Sapir and Whorf from a cultural anthropological base, had evolved the notion (generally referred to as hypothesis) of the deterministic role of language/culture on cognition. Much of their empirical data was based on their ethnolinguistic studies of the languages of North American Indians. In Europe, Basil Bernstein of the British sociolinguistic school, has evolved a theory of the intermediary role of language/social class on cognition. Bernstein's empirical data was based on the dialogues of children from different socio-economic backgrounds. Both the Sapir-Whorf and Bernstein studies have added much insight to the understanding of the area. However, their contributions are still restricted to their respective discipline. Their central focus

is on language/culture or language/social class, and the focus is not translated into cognitive processes. It is not the intention of this thesis to attempt a critical analysis of their ideas. (For a critical analysis of Sapir-Whorf, see Henle, 1966; for Bernstein, see Rosen, 1972). This author would prefer to concentrate on a theoretical *cum* empirical model which has evolved from the Humboldtian line of thinking, one which focuses on the relationship between language and cognition. Although much of the essence of the latter model is drawn from philosophy and cultural anthropology, the main analysis of the problem of the role of language in the process of cognition is essentially psychological. That is to say, it emphasises the nature of the mind, specifically in this case how language is used in the formation of concepts. For a propaedeutic study, we would have to turn to the Soviet school of developmental psychology led by Lev Semenovich Vygotsky. This particular school is considered by Schaff (1973) to be "the only psychological school in the world" which has effectively studied the significant relationship of language and cognition, both theoretically and experimentally.

CHAPTER V

VYGOTSKY'S THEORY OF COGNITIVE DEVELOPMENT

Introduction

This chapter will attempt to trace the various influences on the formulation of Vygotsky's theory and to discuss the implications of his theory in a contemporary context. Vygotsky himself has recommended the adoption of a socio-historical approach in order to understand cognitive development. Following this, a detailed description of Vygotsky's theory will be presented and analysed. This theory will be the conceptual framework from which to investigate higher cognitive functions, as in concept formation.

Influences on the Formulation of Vygotsky's Theory

Vygotsky came from a broad-based background of knowledge: from history of philosophy, linguistics, arts, sciences, and education. He was one of the most prominent and prolific Soviet scholars of the 1920's and 1930's. Vygotsky lived through a time of political upheavals in the Soviet Union -- the collapse of the Czarist regime, the Russian revolution, the rise of the Socialist Republic. These historical events have all in some way influenced the direction of Vygotsky's formulation of ideas. Although psychology was one of Vygotsky's later interests, nevertheless it also represents the essence of his works.

Vygotsky juxtaposed philosophical assumptions to the context of psychological problems. The reigning philosophy of his day in Europe was positivism, and in psychology, associationism. The rise of idealism (e.g., Würzburg, Gestalt) was as a reaction against associationism. In Russia, psychology, being a relatively new "science," reflected the positivist line of thinking of the more prominent European counterparts

(e.g., Pavlov's and Bekhterev's psychology of the reflexes). The ensuing Civil War, Revolution, and the establishment of a republic ushered in another philosophy -- that of Marxist materialism, a philosophy which mirrored the political struggle between the ruling and the working classes. The Marxist ideology posited dialectical materialism as a solution to the philosophical struggle between the schools of mechanism and idealism.

The psychological theories manifest in the Europe of this period were exemplified in such conceptions as Freud's theory of neurosis; Pavlov's and Bekhterev's reflexology in animals; Gestalt school's visual perception; and Stern's personalistik psychology. Vygotsky's critique of these various schools of thought centred on their tendency to generalize particular domains of behaviours to a universal theory (Vygotsky, 1962). Such theories did not offer any general principle of explanation; instead, explanations were based on specific observations which were then extended to general behaviours. The new wave of dialectical materialist philosophy was seen as a saving grace of the theoretically groundlessness of psychological theories. To this ideology was added the historical dimension. Such a conceptualization in psychology could draw on the vast resources of the natural sciences of man and on human history, and thus provided psychology with a broader philosophical perspective based on epistemology. Engel's law of dialectics provides just such a base.

To Engels:

...dialectics is the science of the most general laws of all motion. This means that its laws ought to hold for motion in the province of physical nature and human history, as well as for the motion of thinking.
(Engels, cited in Berg, 1970, p.23)

Psychology, when seen in the light of the law of dialectics, would be able to explain the human's mental development according to the very

same general laws of dialectics that describe the motion of bodies (natural science) and the motion of societies (history). Motion implies change, and with change comes development. Like any historical phenomenon, psychology too follows the general laws of dialectics. That is to say, it has its own internal contradictions and changes, an example of which is the rise of Gestalt School as a reaction to associationism. However, Vygotsky cautioned that a dialectical critique could only set the stage for inquiry; the theory must be able to undergo the rigours of application.

To Vygotsky, "the process of man's mental development is a part of the general process of man's historical development" (1966, p.23). Accordingly, Vygotsky deemed it logical to apply the laws of historical materialism to psychology. Essentially historical materialism refers to:

...human history (which) is fundamentally the history of man's tools of labor and the social structures that depend on these tools. As new tools are developed, new social structures arise to exploit the resources that these tools open up. These tools of labor are man's means of production, which he uses to provide his (material needs). ...The development of these tools determines the general structure of a society -- the forms of its class structure, state and family, as well as its ideology and culture. As new tools are acquired, new social structures appear and old ones die away (Berg, 1970, pp. 41-42).

In historical materialist terms, then, as tools of labour change historically, so do the tools of thinking (mental labour) change accordingly. The tools of thinking are historically developed, socially transmitted, and must be learned anew with each successive generation. This ideology recognizes the limitations of natural science, as in the structure of the reflexes and the conditioned reflexes in association theory. Association theory can only explain what is external and observable, and what constitutes the quantitative changes in organisms. The idealist ideology,

on the other hand, deals with the subjective domains of behaviour, and ascribes to it a certain "spiritual force." Historical materialism offers a new insight into the study of human behaviour -- particularly in the active role of the individual. The human organism is seen in its natural as well as its social habitats. This ideology recognizes the human's active adaptation to nature and the change of nature by the human. This new twist to the study of human behaviour is seen in an historical and social context -- in the interaction of people. This social interaction is mediated by a man-made tool -- the signs.

Much of Vygotsky's theory on higher mental processes is based on Pavlov's "conditioned reflexes." Unlike Pavlov who investigated these reflexes physiologically, Vygotsky examined them psychologically. Vygotsky interpreted the "conditioned reflexes" as something that is acquired or learned through an interaction with one's environment. The first signal system refers to environmental signals; the second signal system refers to speech signals. Vygotsky emphasized that to study higher mental processes, it would be necessary to apply a "mediated" analysis. This analysis refers to the things that the human uses to influence his/her experience. These things are words, speech, and thinking. In other words, all human cognitive behaviours are mediated by signs -- or the second signal system. The sign, for Vygotsky (1966, p.27), is "any conditioned stimulus artificially created by man and serving as a means of mastering behaviour -- one's own or someone else's." To put this in context, the sign-mediated mental processes of humans are historically formed and socially/culturally transmitted from one person to another, from one generation to the next. According to Vygotsky, different cultures have different social practices of sign usage. Individuals in each respective

culture consequently would develop specially tailored cognitive functions relevant to his/her particular culture (cf. to von Humboldt's concept of *Weltanschauung*). Vygotsky further illustrated these cultural differences in cognition. For example, cultures with no written language would usually develop better visual memory than logical memory. In writing cultures, on the other hand, logics dominate visuals. To demonstrate the differences, Vygotsky gave the example of the deaf-mute child. Although this child possesses normal speech and mental organs, yet he is without hearing. Consequently he relies on visual cues for his construction of experience.

The central features of Vygotsky's conceptualization of human cognitive processes are the signs, their origins, and their use in thinking. Based on this background of knowledge Vygotsky formulated his theory of human development.

Vygotsky's Sociogenic Thesis of Cognitive Development

Vygotsky (1966, and 1966) offered a thesis of "sociogenesis of cognitive development," that is, all higher cognitive functions originate from the social level and only progressively through internalization, become psychological phenomena. This thesis postulates a two-plane model of development of the human. On the first plane, the social, between people, elementary cognitions are derived from social dialogues and interactions between the parent and child. Since this cognitive activity could only occur within a two-person dynamic, it comes to be called the intermental category of cognition. This phenomenon in cognitive development had been noted by other scholars in the field as well. For example, Werner (1963) referred to it as the "primordial relationship;" while Schmidt (1973) called it the "co-responsive participation" between parent

and child. This social means of cognition, according to Vygotsky, is contingent upon the acquisition of language. By that Vygotsky meant that the child must first learn to use signs through an external or physical system -- that is, by pointing gestures or voiced speech -- in a social context. Progressively he learns to use signs not only to direct others but also his own cognitive activities in his own mind. This process of graduating from the two-person social plane to the one-person mental plane is called "internalization." As the child progressively internalizes this social means and acquires the rudiments of language, and makes these his/her own, he/she begins to include self-dialogue as part of his/her developing repertoire of higher cognitive activities. This propels the child to the second plane, the psychological, in which cognitive activities become more complex and are one-person sign-operations. This comes to be called the intra-mental category of cognition. At this higher level of cognition, dialogues can occur within the child rather than only with an adult. Language in ontogenesis is initially a social dialogue, and then gradually becomes an individual/psychological means which can be used to internally direct one's own cognitive activities. The mastery of language is a pre-requisite for the development of higher cognitive processes. "Mastery" to Vygotsky implies much more than verbal speech. It also covers the different notions of guiding, directing, focussing, cueing, or controlling in the encompassing process of mastery (Berg, 1970). This mastery of language, moreover, not only plays an intimate role in the child's self creation; it also assumes an integral role in the process of concept formation. It is important to note that in Vygotsky's thesis it is never language in isolation, but language as it mediates the dynamics of social and psychological discourse, which plays a significant role in the formation

of all higher mental functions.

When Vygotsky spoke of higher mental functions, he was referring to logical memory, voluntary attention, verbal thinking, and concept formation. These are all examined in great detail. It is not my intention to examine all of these processes. Only the latter one -- that is, concept formation, will be considered in the context of this thesis.

In the process of concept formation, different cognitive activities are involved. They are: generalization, abstraction, analysis, and synthesis. Although these basic cognitive activities are indispensable to concept formation, one further component must be present to act as an intermediary in their dynamics, namely, language. In other words, language is the chief means by which one directs one's cognitive operations, controls their course, and channels them toward the solution of various conceptual problems (Vygotsky, 1966). In order to understand what constitutes concept formation, it would be necessary to examine the origins of language and thought in the history of child development. Of particular importance is the investigation of the use of language in the various cognitive activities which culminate in concept formation. Vygotsky recognized the historical implications of language-as-a-tool in human cognition and applied the concepts of language and thought as the guiding principle in unravelling higher mental processes.

The Origins of Word Meaning

Vygotsky conceptualized the separation of the genetic roots of speech and thought. This idea was formulated from the comparative analysis of animal development and the human infant development. At this "primitive" stage, speech and thought are two separate and unrelated entities. Speech is pre-intellectual, while thought is pre-linguistic. Pre-intellectual

speech is characterized by affective sounds, for example, crying. This form of speech has two components: the semantic and the phonetic, which are united. At the pre-intellectual speech stage, the child uses "learned" sounds, sounds which come to have meaning, for example, the cry of hunger or the cry of distress -- to effectively direct the adult's attention. Pre-linguistic thought, on the other hand, first appears in the primitive use of tools (signs) without any verbal component. Vygotsky used the pointing gesture as an example of pre-linguistic thought, in which the child uses a physical gesture to focus the attention of the adult, in a fashion similar to when the child uses cries. It is in the unity of pre-intellectual speech and pre-linguistic thought that the origin of word meaning develops.

The word deprived of meaning is but an empty sound, meaning is the necessary constituent of the word itself (Vygotsky, 1939). From the psychological point of view, word meaning refers to a generalization or a concept, both of which are synonymous. Generalization and concept are the most specific function of thought. To Vygotsky:

The meaning of a word is a phenomenon of thought, only in so far as thought is embodied in speech, and on the other hand, it is a phenomenon of speech only in so far as speech is connected with thought and illuminated by it. It is a phenomenon of verbal thought or of meaningful speech; it is a unity of word and thought. (Vygotsky, 1939, p.30)

In other words, word meaning is both a phenomenon of speech and a phenomenon of thought.

In the history of development of language, the structure and the psychological nature of word meaning change, from the primitive forms of generalization (thinking-in-words) to the highest and most complex forms of abstract ideas. For example, in the very young child, the word stands

for the "object" itself, as well as its respective characteristics inherent in the object. Thus the word "cow" not only refers to the animal per se, but also to all its identifiable characteristics which constitute cowness. The development of the word and its meaning is a fundamental step in the child's cognitive process. Word meanings are not constant, they change and adapt with time, and in accordance with the different stages in which thought functions. Word meaning brings together the dynamics of speech (language) and thought.

Perception is the most elementary form of thought process, while thinking (conceptual) is the highest form. However, perception is only cursorily dealt with by Vygotsky. Perception is the first step in the process of thinking. It is also an indispensable step in the development of word meaning. In perception, similarities or differences in stimulus objects are observed. This step is then carried further to the process of relating thought to the word. This relation proceeds from thought to word, and conversely from word to thought, until a relationship between the two is established. Throughout the process, the relation between word and thought changes functionally. Thought is not expressed in words, but comes into existence through them. Every thought tends to connect something with something else, in order to establish a connection between these two "things" (Vygotsky, 1939). In view of the way Vygotsky defined word meaning, it is not surprising that Vygotsky questioned Stern's idea of the "great discovery of the word" in a child. To Vygotsky, a child does not "discover" in a single instance the meaning of the word. Rather, he/she develops the meaning of the word through a slow process which involves perception, pre-intellectual speech, pre-linguistic thought, and the union of all these activities together in the culmination of word

meaning, around the age of two (Vygotsky, 1966).

In the development of external speech, the child starts with one-word utterances, to two-words, then two or more to simple sentences. The development of word meaning follows a parallel process as in external speech. In the one-word or holophrasis stage, the word represents undifferentiated thought. Progressively, with the addition of more words to the child's repertoire, single words which initially represent global meanings will progress to additional words which identify and differentiate the complex whole to their related parts. Speech, in its construction, is not a direct reflection of thought. Thought into speech, on the other hand, undergoes numerous changes before it finds expression in words.

Vygotsky stated that the child uses words long before he/she grasps their meaning. Similarly, grammar precedes logic, that is, the child can use the correct form of grammar long before he/she can explain its grammatical reasons. Thus, Vygotsky conceptualized language as having a leading role in thought development. Language is first presented to a child through social dialogue. From the social to the psychological plane, word meaning develops and changes according to a child's growing thought process. A child's ability to communicate with others and with him/herself is by the help of speech, and by the process of differentiation of verbal meanings in speech and thought. The transition from the social to the psychological plane is characterized by a particular phenomenon which Vygotsky called vocalized inner speech -- or egocentric speech.

Egocentric Speech. Vygotsky's egocentric speech refers to the phenomenon of transition from inter-mental to intra-mental functions, from social, collective activities of a child to his/her individual activities (Vygotsky, 1939). On the other hand Piaget's concept of egocentric speech is

defined as a type of speech which is dominated by the child's viewpoint. Vygotsky noted that the frequency of the child's egocentric speech increases when he/she is faced with a problem situation, particular when he/she is in a group situation. To Vygotsky, this particular phenomenon serves a specific function. It serves as a purpose of mental orientation, of conscious understanding, of overcoming difficulties and obstacles, and of consciousness and reflection.

Egocentric speech in its development tends to be abbreviated or condensed. The type of speech tends to exhibit a peculiar form of syntax, and the sentence appears to be abbreviated or incomplete. In other words, this speech pattern reflects the thought pattern at this stage. Egocentric speech also conveys the lack of differentiation between speech-for-others and speech-for-oneself.

As the distinction of speech-for-oneself progresses, vocalization becomes unnecessary and meaningless. As egocentric speech becomes more independent and autonomous, there is less need for its external (vocal) manifestation. Ultimately this speech-for-oneself separates itself entirely from the speech-for-others. As egocentric speech ceases to be vocalized, a new form of speech arises. The decrease of vocalized speech indicates the developing process of abstraction from sound, of the developing ability of the child's thinking, of "imaging" words rather than pronouncing them (Vygotsky, 1939). This new form of speech is referred to as inner speech or verbalized thought.

Inner Speech. There are peculiar distinctions between inner and oral speech. First, the relation between the semantic and phonetic elements in oral speech is entirely different in inner speech. The phonetic and syntactic elements are reduced to a minimum in inner speech. Second, the

semantic element, that is, the meaning of words takes precedence. Inner speech places emphasis on semantics rather than phonetics or syntax. Third, there is a separation of meaning of the word from its sound in inner speech. Fourth, in inner speech, there is "a constant rule of the predominance of sense over meaning, of sentence over word, of the whole context over sentence" (Vygotsky, 1939, p.48). With these distinctions, the differentiation between oral and inner speech is now complete.

Vygotsky (1939) further differentiated between the sense of a word and its meaning. The sense of a word is the culmination of all psychological consciousness aroused by a word. Sense implies a dynamic, ever-changing, and a complex whole, which has several zones of stability. The meaning of a word is but one of these various zones inherent within the different contexts of speech. Thus a word could have a different sense dependent on the context. The meaning, however, is that unchanging quality which remains stable over changes of the sense of the word. It appears that for Vygotsky's child, meaning precedes sense. And it is only through progressive differentiation under various circumstances that sense of a word develops.

The function of inner speech is entirely different from that of vocal speech. Inner speech is not meant for communicative purposes. It occurs under different circumstances from those which produce vocal speech. Inner speech is unintelligible, as it is often abbreviated and incomplete. It is similar to egocentric speech in this characteristic. Whereas egocentric speech is vocal, inner speech is silent. Vygotsky likened inner speech to the first draft of a book, which is almost in an outline form, with its main points highlighted. The transition of inner to external speech demands a change in the structure of speech. External speech is not just

voiced inner speech. It is the transition of a complex, dynamic process -- from inner speech into an intelligible speech meant and developed for others rather than for oneself.

Inner speech is closely tied to thought processes. It establishes a relation of language and thought. It fulfills a function of developing speech for oneself. It serves to solve problems. The elements of thought and speech, however, do not coincide. Even though both processes can be united, yet they are not identical. The structure of thought is different from speech. Thought does not consist of separate words as in speech. It presents a holistic and complex image rather than separate units of words. But to put thought into speech, one needs to put the image into separate words. Vygotsky summarized the relation between language and thought in this way:

The bond between thought and words is a living process: thought is brought forth in words. The word, deprived of thought, is a dead word. ...But a thought which has not been embodied in words remains a shadow. (Vygotsky, 1939, p. 52)

This brings us back to Cassirer's idea of the individual as an actor who actively utilizes symbols (in this case, language) to create a world of meaning for oneself. It also parallels the historical materialist view on human behaviour -- specifically in the active role of the individual and the intermediary role of the sign in mental development.

The description of the intimate relationship between language and thought has placed Vygotsky's ideas in a conceptual context. We can now comprehend the process in which a young infant develops his/her speech and thought from the immature to the mature stage: from pre-intellectual speech, pre-linguistic thought to egocentric speech, to inner speech, from speech-for-others to speech-for-onself. All these are fundamental elements

in the human cognitive process. Having established the bases for thought and speech, we can now proceed to what constitutes higher cognitive processes -- particularly Vygotsky's formulation of concept formation in a problem solving context.

Concept Formation

In an attempt to empirically verify a part of his general thesis, Vygotsky modified Ach's experimental blocks to suit his own research paradigm for inquiry into concept formation. The result of this effort is the Vygotsky Blocks of concept formation. Using these blocks as clinical tools, Vygotsky painstakingly analysed and deduced his version of different stages of concept formation. The outcome of this experimentation was his conceptualization of the process of concept formation as we understand it today.

According to Vygotsky, concept formation includes several basic functions: perception, generalization, differentiation, abstraction, analysis and synthesis. Moreover, although these functions are indispensable to concept formation, one further component acts to mediate their dynamics, namely, language. In other words, language is the chief means by which one directs one's cognitive operations, controls their course, and channels them toward the solution of various conceptual problems (Vygotsky, 1966).

Out of these various formulations, Vygotsky had postulated stages of development in the process of concept formation, conceived out of a problem solving situation with the Vygotsky Blocks (Berg, 1970; Hanfmann & Kasanin, 1936; Stewin, 1968; and Vygotsky, 1966).

Stage of Syncretic Thinking. During this stage the very young child forms "unorganized congeries" or "heaps" made up of subjective impressions

and "syncretic" images. Here, syncretism refers to the process of blending or fusing of two or more differing forms together into a composite image. Word meaning is no more than a group of individual objects depicting a visual image in the child's mind. This form of thinking is perceptually oriented, organized by immediate perceptions. In the stage of syncretic thinking, there are several sub-stages.

- A. Trial and error stage -- The child forms groups of "heaps" at random by guessing.
- B. Syncretic visual image stage -- A group is formed on the basis of spatial or temporal arrangement of the objects. This arrangement creates a visual image which is syncretically produced.
- C. Composite group stage -- A group is created by bringing together blocks chosen from previous groupings. New groups which are formed have no internal connections, but share a common origin.

Stage of Complex Thinking. The child uses concrete and factual properties of the blocks derived from abstract or logical deductions. These deductions are discovered through direct experience; therefore they lack logical unity. Complex thinking functions in uniting objects into groups. This type of thinking is characterized by the formation of "families" of diverse concrete objects.

- A. Associative complex -- A group is formed on the basis of any perceived similarity or connection between the sample block and other blocks. Blocks may be chosen based on the similarity of colour, then perhaps shape, or size. Blocks may be chosen based on their proximity in space, or any connection that the child perceives with the sample block.

- B. Collective complex -- A group is formed of blocks which differ by traits and thus complement each other. The association or connection is by contrasts rather than by similarity. For example, a child might form a group of blocks of different colours, or different shapes. According to Vygotsky, at this stage a child learns complementary associations in real life circumstances, such as cup and saucer; knife, fork and spoon; a set of clothing; etc., which are functional collections and have complementary relationships with each other.
- C. Chain complex -- A group is formed based on a given criterion and the relationship perceived between the sample and other blocks. For example, the triangular block will be followed by several triangular blocks. Then the criterion is changed when the child all of a sudden notices, for instance, a blue triangle. This colour will be used as a criterion for subsequent blocks until he notices another different attribute. There is a constant shifting of criteria, although there is always a connection between any two blocks at any one time. At this stage, there is no abstraction of a single trait or the formation of a single organizing principle.
- D. Diffuse complex -- A group is formed based on remote bonds between the blocks. From the sample triangular block, a child may pick triangles, then trapezoids (which are perceived to be "triangles with the tops cut off"), to squares, to hexagons, to circles. Here, each successive block approximates the previous block in a distant sense. Diffuse complex thinking can be indefinite due to the remote nature of the associations, and is

not constrained by perception.

- E. Pseudo concepts -- This is the highest stage of complex thinking. It is characterized by the "generalization formed in the child's mind, ...psychologically very different from the concept proper" (Vygotsky, 1966, p.66). A group is phenotypically defined, based on the perceptual similarity. This stage of thinking suggests the likeness of a concept in outward appearance, but the abstractness is not yet achieved.

Stage of Conceptual thinking. This stage of thinking involves "concepts tied in a network of relations of abstractness and generality, as well as involving processes of analysis and synthesis" (Berg, 1970, p.309). The inclusion of the process of abstraction is particular to this stage. The function of abstraction is to isolate single traits from the concrete whole, in order to abstract a principle for grouping.

- A. Partial abstraction or abstracted groups of traits -- A group is formed by placing "maximally similar" blocks together, that is, blocks which share groups of traits. Certain traits are given preference to others. These traits become the focus of attention and are abstracted from other periphery traits. This stage is characterized by an impression of commonness or maximal similarity.
- B. Potential concepts or abstracted single traits -- A group is formed on the basis of one single trait. This trait is abstracted from its phenotypical similarity, for instance, colour, or shape. Potential concept is bound to concrete situations, either perceptual or functional impressions.
- C. Potential concepts and complexes -- Since complexes require a child to attend to specific traits of an object, accordingly,

potential concepts are derived from complexes. In a potential concept, a single trait is abstracted, whereas in complex formation, relationships and associations culminate in generalizations which unite objects together. The apparent trend is from concrete impressions to an ordered, abstract system of thinking.

- D. True concepts -- A group is formed on the basis of the re-structuring of a child's complexes and concepts, and synthesizing both the processes of abstraction and generalization. At this stage the word ceases to serve as the arbitrary referencing function in the forming of a concept. The word has now become the abstract symbol of the concept.

In Vygotsky's formulation of the process of concept formation, perception initially functions in a global, immediate manner where a child tends to merge different elements into an unarticulated image based on chance impressions. It is characterized by a haphazard organization of a child's visual field. Progressively, perception becomes more differentiated, mediated by the process of abstraction. In abstraction, it is necessary to single out common elements in different units and to distinguish these elements from the totality of concrete experience in which they are embedded. Concepts are not formed by simply abstracting elements from the whole. The process of analysis and synthesis must be actively introduced by the child in order to form a concept. Analysis induces a child to pick out the relevant traits to be synthesized. Synthesis enables a child to use the previously analyzed traits to form "for himself" the true concept. The latter two processes are the most important elements in the process of concept formation. Without them, no abstract concepts can be formed. or concepts that are formed would only be pseudo rather

than true concepts.

The decisive means which directs all these cognitive operations in concept formation, according to Vygotsky, is the word. The directive function of the word in ontogenesis proceeds from the undifferentiated and syncretic thinking of the very young child to the abstract, analytic and synthetic thinking of the adolescent and adult. Vygotsky recognized that even in the abstract thinking adult, earlier complex thinking stages can occur.

Vygotskian Research

Of researchers who follow the Vygotskian tradition on the mediating role of language in mental development, one of the foremost is Vygotsky's colleague Alexander Luria. His work deserves Western recognition. Luria not only rendered Vygotsky's theory of development more comprehensively, he also broadened it to include a "cross-cultural" perspective (albeit still within the confines of the Soviet Union). Luria carried out extensive experimental research with the minority peoples of the Central Asiatic regions of the Soviet Union. These experiments tend to extend and consolidate the theoretical portion of Vygotsky's theory. For example, Luria proposed that perception is a complex process which includes complex orienting activity, a probabilistic structure, an analysis and synthesis of perceived features, and a decision-making process (Luria, 1976). In essence, the process of perception parallels the process of (reflective) cognition, as both of these processes are mediated by language. Luria further elaborated on perception -- that structurally it is dependent upon historically established human practices. And like human practices, perception undergoes change with time, and with the developing psychological structure.

With reference to the perception of colour, Luria found that colour perception remains constant throughout the course of the historical development of a particular culture. However, the perception and conceptualization of colours are intimately intertwined with the language system. That is to say, language has an impact on how colours are perceived by a particular speech-cultural community. This cultural relation to perception has often been referred to as the Sapir-Whorf hypothesis. The findings of Luria's investigation imply that the perception of colour is tied to the "practical experience," which in turn affects colour perception. With reference to the perception of geometric forms or shapes, the same rule applies more-or-less. That is, shape perception is strongly dependent upon cultural conditions and practice. Thus persons who are concrete or graphic-functional oriented will perceive shapes differently than persons who are abstract or logical oriented. However, the difference is not in degree, but in kind. To elaborate, this means that the former type of individuals would draw on the concrete and practical experiences while the latter type would draw on theoretical experience and draw from a system of differentiated concepts. The former group tend to ascribe "names" of objects to shapes, while the latter tend to give categorical designations to shapes. Luria also investigated the domain of perception by observing illiterate, semi-illiterate and "educated" adults. He found that the principle of shape perception varies with changing cultural practices. The trend is from the concrete (of the illiterates) to the theoretical (of the "educated").

Luria further extended the concept of classification. In classification two processes are involved: generalization and abstraction. Inasmuch as language is an integral part of perception, so too, it plays a

vital role in the process of generalization and abstraction. In higher mental activities (as in concept formation), a restructuring of cognitive activities is required under socio-historical evolution. Following Vygotsky's lead, Luria analyzed the changing meaning (or function) of the word, in order to outline the different steps of concept formation. Luria's findings are similar to Vygotsky's, in that word meanings change with time, and with varying contexts. Luria further elaborated on this formulation. Initially mental operations are graphic and memory based, and the word plays only a small part in these operations. Progressively, at the more mature mental operations, the word is used to systematize and to abstract relevant features of objects (i.e., to differentiate). At this higher mental stage the (logically oriented) individual could draw on his/her own inferences and theoretical background in order to come to terms with the formation of an abstract concept (i.e., generalization). This occurs by "analysis through synthesis." This latter orientation to the abstract and categorical thinking is a culmination of societal experience conveyed by the linguistic system. And through the socially transmitted word, graphic thinking may be transformed into conceptual thinking. This transformation or transition is also related to a fundamental change in the type of activity one engages in. To the extent that graphic or situational thinking is rooted in the more concrete, practical operations, conceptual thinking depends on the more abstract, theoretical operations found often in educational systems (Luria, 1976).

Luria's theory has important educational implications. He theorized that in cognitive demands, people often restructure new experiences according to their daily practical activities. He also implied that the restructuring of one's cognitive structure from the more elementary to the

more complex stage is possible through teaching the individual to interpret words as a symbol of abstract categories. An important point to note here is in the "how" and not just the "what" is being taught. It is in this regard that Luria's works suffer somewhat from lack of clarification of the various social-psychological dynamics involved in the process of "education."

A number of studies (Thompson, 1941; Stones, 1970; and Stones & Heslop, 1968) on concept formation in normal children lend support to Vygotsky's contention of a developmental trend in this process. They generally suggest that what Vygotsky referred to as the "true conceptual stage" is usually arrived at only at puberty. Stones and Heslop (1968) found that the results on the Vygotsky Test are significantly correlated with verbal skill. Stones (1970) subsequently found that language, in the form of supplied verbal labels, facilitated the performance in the concept formation test. Harrington's (1969) research comparing normal and retardate children, indicated that the latter sample was significantly less able to engage in conceptual thinking even with the aid of verbal cues. Harrington's study suggests that retardates are more rigid or less flexible than their normal counterparts in their overt behavioural performance.

Hanfmann (1949) presented a study concerned with personal patterns in intellectual performance. Personal patterns were taken to mean the "individual differences in a given performance which are of a qualitative rather than of a quantitative nature" (p.315). The study suggests that intellectual performance, as in concept formation utilizing the Vygotsky Blocks, might possibly be related to certain personality patterns, that is, perceptual versus conceptual patterns of dominance in thinking. The study found that the particular type of approach to problem solving was

significantly related to performance outcome. The perceptually-oriented took less time than the conceptually-oriented in reaching the correct solution. This result possibly jeopardizes Vygotsky's conceptualization -- that perception is an elementary unit in the thinking process. Further research in this specific area could perhaps clarify and elucidate on the problem posed here.

The studies cited have focussed on the relationship of language to concept formation, as well as personal patterns to intellectual performance. In the main, the majority of the findings tend to consolidate that part of Vygotsky's thesis relating to the role of language in the direction and formation of concepts. Luria's extensive investigation has broadened Vygotsky's theory conceptually as well as experimentally. Hanfmann's study, on the other hand, raises questions concerning Vygotsky's conceptualization of the thinking process. This latter study adds a further dimension not apparent in Vygotsky's theory, namely, personal patterns. To a certain extent, this is dealt with in Luria's study, in the manner of a developmental analysis. However, another aspect of Vygotsky's theory concerning the role of different social-psychological dynamics in cognitive processes, remains to be explored more rigourously and conceptually. This author is of the opinion that a developmental study of concept formation, along with the dimension of cognitive style, between unilingual and bilingual children from various social-cultural-psychological bases is one thrust of investigation which may provide some conceptual clarity to the cognitive theory put forth by Vygotsky.

Summary of Vygotsky's Theory of Cognitive Development

In sum, Vygotsky had delineated a two-plane model of human development centred on language as a social means of thought. He recognized the

historical implications of language as a tool in human cognitive development. He applied the principles of language and thought to the investigation of higher mental processes. In his model he formulated the stages which are involved in these processes. First, from the social plane, in dialogue with people, the child acquires the rudiments (the social functions of language) basic to his later cognitive development. Then, as language becomes internalized, the child progresses to the psychological plane, where he/she develops the processes of generalization, abstraction, analysis, and synthesis to create new experiences. It is important to recognize that the child is not just internalizing language, but also through the vehicle of speech, is internalizing the affective, dynamic social dialogue. It is on this latter intra-mental plane that the child directs and controls his/her own cognitive functions through the means of language. Vygotsky also distinguished the processes involved in the dialectic of the development of thought and speech. He postulated that the separate genetic roots of thought and speech unite in meaningful speech. He further stated that thought and speech undergo transformations due to reciprocal influences which culminate in new structural forms -- fluent speech and conceptual thought.

Vygotsky, in his thesis, had given a prominent position to the social origins of language. He had focussed on the interaction of language and cognition. In the thinking process, although Vygotsky recognized a difference between the reality reflected in thinking rather than in perception, the extent of explanation of this difference is that each represents a different level of consciousness, with perception serving as an elementary form. This notion has created conceptual problems (cf. Hanfmann, 1941) and requires more clarification. There is no doubt that

Vygotsky has provided profound insight into the complexity of human cognition. He recognized the social origins of language and cognition. These ideas have been taken up by others as an area of inquiry. For instance, Bernstein's concept of a class-based "restricted" and "elaborated" speech codes are directly traced to Vygotsky's egocentric speech. These concepts were offered by Bernstein as a thesis of "fundamental qualitative differences" in speech and social development, which implicate the educability of individuals. On the other hand, it would seem that Vygotsky did not empirically explore the effects of the patterns of social-psychological relationships within each speech community, and the consequence on cognitive development. Moreover the domain of personal patterns (or cognitive style) in relation to cognitive performance is absent from his works. It is the intention of this thesis to attempt a theoretical and empirical integration of these various concerns.

CHAPTER VI

SOCIO-LINGUISTIC IMPLICATIONS IN COGNITIVE DEVELOPMENT

Introduction

This chapter will review the consequences of socio-linguistic variables in cognitive development. For the purpose of this thesis, the term socio-linguistic encompasses the social (implying socialization experiences) and the linguistic (implying language experiences, more specifically unilingual and bilingual experiences) variables. These various issues are placed within cultural contexts -- that is, within the Western/North American and Oriental (Chinese) cultural contexts. In addition, a specific category of socio-linguistic experience, namely, minority experience, will be discussed. The assumption here is that each of these experiences could have serious implications in cognitive development.

Socialization Experiences

Schmidt (1973) refers to a child not only as an *animal symbolicum*, but simultaneously as an *animal educandum*. A child, by virtue of birth into a world of humans, and through interactions with his/her caretakers, acquires the rudiments of an ability to form symbols. This capacity for symbolic activities, although is one of the defining characteristics of humans, does not automatically elevate a child to the status of a "humanized" being -- with the respective human characteristics. Furthermore, Schmidt emphasizes that a child can and must be educated into a socialized and culturalized being within his/her particular socio-cultural milieu. To emphasize the implications of *animal symbolicum* and *animal educandum* in the humanizing process, Schmidt refers to the cases of feral children and the socially deprived children.

In the case of the feral children, raised in isolation and in association with animals, they never acquired human capacities (i.e., symbolization and social interaction) even when they came under human care. In the case of the socially deprived children, Schmidt relates two different cases to illustrate the importance of initial social interaction in infancy. One child, Anna, was raised in seclusion and extreme social deprivation. When discovered at the age of six, she was placed under proper physical care of an institution and subsequently in a foster home. Unfortunately in the institution, little social or psychological warmth was shown to the child. Later, even with expert speech training, Anna never acquired the capacity for language although she showed signs of relative improvement in the domain of social interaction. On the other hand, Isabelle, was also raised in seclusion by a deaf-mute mother. But here the similarities with Anna ended, for Isabelle was under the loving care of her mother who interacted with her. Unlike Anna, when Isabelle was given the proper physical, social and psychological care, subsequently she was able to acquire normal speech, and she had little trouble interacting with other people. These two differing cases point to the importance of initial human interaction -- particularly the quality of this interaction, if the characteristics of humanness and speech are to be fully developed.

Besides the more immediate, primordial relationship between parent and child, there is a broader process by which a child is "humanized," namely, education. Schmidt (1973) defines education as the whole interaction process whereby a child becomes a social human being. This process implies:

...the comprehensive sense of upbringing, formation, and the child's participation in becoming himself -- i.e., himself as an individual human person, as a fellowman in reciprocity with other people, as a member of a society and a participant in a particular culture (Langeveld, in Schmidt, 1973, p. xi).

The interaction which is included in the process of education reflects the relationship between the educator and the "educand" (Schmidt, 1973). It is the relationship which is initially between parent and child, then progressively extends to other adults, to schools and other social institutions, and to society at large. In this sense, any person who interacts with a child can be a potential "educator." This places an important emphasis on the relationship. It is the quality of this relationship which guides a child in the development of his/her cognitive abilities. Thus, education seen in this broad perspective extends beyond the conventional notion of school-confined activities. It connotes an ongoing, life-long process; it also implicitly includes the comprehensive processes of socialization and acculturation.

Bernstein (1972) defines socialization as a process of control whereby a particular moral, cognitive, and affective awareness is evoked in the child and given specific form and content. By definition, it implies social activities between people, within a social milieu. The product of these social activities will more-or-less reflect the particularities of that specific social milieu. Socialization becomes the basis of fundamental qualitative differences in human development. Hence, the type of speech acquired by a child could have an impact on his/her scholastic performance. Bernstein's extensive research on speech codes has indicated the class- and family-related significance in a child's educability. However, Bernstein did not attempt to analyse more closely the effects of culture,

and in particular minority culture, on intellectual activities. Nor did he consider the impact of maternal styles and their relationship to cognitive styles in cognitive development. These leave a gap in the understanding of the interaction of culture and cognitive style in human cognitive development.

Acculturation generally refers to the mutual influence of two cultures which are in contact. However this mutuality is more one-sided than it is generally claimed. Christian (1965) defined acculturation as a process of changing emphasis and loyalties from one's original linguistic and cultural identity to another identity, usually the identity of the conqueror or the dominant group. Within such a process a child learns to adapt to his/her new cultural community, and acquire the specificities of all manners of being and behaving in this new cultural community. In the process of acquiring these various acts, a child acquires a specific cultural identity shared among the majority group in the community. Each of these processes shapes the potentialities of a child to their specific (i.e., social and cultural) realization, a realization which fits the image accepted by a specific socio-cultural group. Christian further warned of the dangers of the acculturation of a culturally different people. These people may feel alienated by the host culture(s), or they may reject their original culture(s). In either case, there is a loss of self-identity, much to the detriment of these individuals. The persons who are at a disadvantage are the newcomers or the conquered, never the hosts or the conquerors, in the society. It is often these practices which lead to inequality and injustice in societies. Invariably, it is often the children of the newcomers or the conquered who suffer, socially, psychologically, as well as educationally.

Lesser, Fifer and Clark (1965) investigated the mental abilities of children from different social class and cultural backgrounds. Different social classes and cultural groups (Chinese, Jewish, Negro, and Puerto Rican) in New York City were selected for the study. The most significant finding was that there are class differences in mental abilities amongst all groups; and cultural differences are significant only among some groups. In the interaction of social class and ethnicity, it was found that significant differences appeared only within the same cultural groups of different classes. The implications of this study are that optimum social (class related) and educational conditions could affect the development of mental abilities in children. This study has contributed much needed information in this area of inquiry. However, to further clarify the mystery of socio-cultural differences, the addition of cognitive style could assist in the investigation.

Ghuman (1975) conducted a cross-cultural comparative study on British Punjabi, indigenous Punjabi, and English boys in their basic intellectual abilities. He found that the British Punjabi and English boys performed similarly with no significant differences. However, significant differences were found between the two Punjabi groups. These differences were attributed to the particular schooling experience the two British groups had, which was a Western-type, and is dramatically different from the schooling experience the indigenous Punjabis received. In the main, this study emphasizes the effects of a Western-type education and its implications in the development of intellectual abilities in children. Although cultural information was presented in the study, yet not enough emphasis was given in this regard in the interpretation of the results.

Haynes (1971) investigated the learning abilities of English and Indian children with varying degrees of "linguistic and cultural handicaps." It was found that there were significant differences in test performance favouring the English children. Although linguistic and cultural variables are included in this study, they are not given appropriate discussion and integration. In the main, Haynes's study is more concerned with "diagnostic validity" of test instruments, rather than with the social or linguistic elements which would seem more appropriate in the interpretation of this study.

In sum, these various studies, although with different thematic emphases, all allude to the implications of socialization experiences in the development of cognitive functions. The linguistic aspect of cognitive development, concerning the type of language experience and how it is acquired, has not been the concern of the above studies.

Language Experiences -- Unilingual and Bilingual

By investigating the unilingual and bilingual dimensions of language development, one can abstract the finer relationship of language and cognition. The case of an unilingual child and his/her language development has been discussed within the framework of Vygotsky's theory. In the case of a bilingual child, he/she is presented with two languages, or two social means of cognition. This is to say, a child is cognitively directed via two "symbolic nets," and progressively, he/she begins to construct his/her own individual experience -- both symbolic and non-symbolic, through this qualitatively different means of cognition. The dual linguistic inheritance of the child impels him/her to cognize a single phenomenon in a manner different from that of his/her unilingual counterpart (Bain & Yu, 1977). He/she must learn to differentiate between the pho-

netic sounds and the meaning attributed to those sounds. This implies that the nature of these particular speech systems encourage the early recognition that a name can be interchangeable, whereas meaning is an inherent, abstract and stable quality of a particular thing. From this experience a child acquires the rudiments of differentiation and abstraction, the essential elements in later higher cognitive functioning.

Early studies on bilingualism (Jones, 1960; Smith, 1957; and Weinreich, 1953) suggested that the learning of a second language negatively influenced cognitive development, especially school achievement. However, these early studies failed to control variables such as age, sex, socioeconomic status, or degree of bilinguality. And even more importantly, these early studies concentrated more on the linguistic structure and failed to discriminate the social relationships which incur different types of bilingual experience. Overall, their conclusions were based on poorly conceived and designed studies.

Later studies on bilingualism discerned two broad types of bilinguality. Different researchers have various terms to connote these types: the pseudo bilingual and the balanced bilingual (O'Doherty, 1958); the compound bilingual and the co-ordinate bilingual (Ervin & Osgood, 1965); and the disruptive and creative bilingual (Bain, 1977). These terminological differences seem to stem from the different theoretical orientations and purposes of these researches. To O'Doherty, the pseudo bilingual is one who is more familiar with his native language than his second language. The balanced bilingual, on the other hand, is one who has mastery of both languages and uses both with equal facility. O'Doherty's concern was more in the area of prescriptive speech proficiency. However, Peal and Lambert

(1962) in a landmark study in Canadian social psychology, took a methodologically rigorous look at the cognitive consequence of balanced bilinguals among English/French Canadian children. Peal and Lambert found that the balanced bilingual tends to have a greater ability in concept formation, and in general, a greater cognitive flexibility. In other words, the acquisition of a second language in the degree of "balanced bilinguality" enhances cognitive abilities. Unfortunately, Peal and Lambert did not note the impact of the patterns of social relationships in the development of different types of bilinguality -- a neglect which will be rectified in this study.

Ervin and Osgood's (1965) distinction between the compound and co-ordinate bilingual is similar to O'Doherty's pseudo and balanced bilingual, in description only. Ervin and Osgood viewed the phenomenon of bilingualism from the vantage point of language system(s). In the compound bilingual, the two languages are presumed to constitute one single system. Generally, such a person learns both languages in the same context -- an example of which is the use of mixed languages in the home, or when one language is acquired through the medium of the other, as in the learning of a foreign language through the medium of the mother tongue, in certain instructional systems. The co-ordinate bilingual, on the other hand, acquires two languages in different contexts, that is, at different times, in different places, and in different concurrent actual life situations. As a result of this type of language acquisition, a parallel language structure is developed. This type of bilingual can be seen in individuals who are raised under the "one person: one language principle" (Leopold, 1939), or under the auspices of a second language immersion-type of programme. Such individuals are considered to be well-versed in the

appreciation of nuances, emotional overtones, and cultural dimensions of both languages (John & Horner, 1971). The co-ordinate bilingual is seen as having the maximal level of language skill when compared to the compound bilingual, even though the latter may have acquired a reasonable degree of mastery of the sound system in the second language. These studies emphasized the linguistic aspect or cognitive skills, with little attempt at any social-psychological explanation. Hence, very little understanding can be gleaned in the psychological domain of language acquisition, particularly bilingual development.

Another study (Bain, 1977) has proposed a typology of restricted unilingual, disruptive bilingual, elaborated unilingual, and creative bilingual in an ascending hierarchy of efficiency in cognitive tasks. Bain suggests that these four speech types constitute a continuum of linguality, representing increasingly flexibility in the means of cognition. He also suggests that various means of cognitive outcome are a consequence of the social conditions under which the languages are learned, especially in the home and school environments. A disruptive bilingual would be the type of individual who tends to be fettered by the phonetic word; who searches for a "shared familiarity" of social relationships; and cognitively has closed himself/herself to further experience. One pattern of social relationship in which the disruptive bilingual is often found is in the immigrant family. The characteristic immigrant family is one where the second language is not given "appropriate psychological, sociological and pedagogical care in order to accommodate the home language: school language disparity" (Bain, 1977). The creative bilingual, on the other hand, tends to be less bound by the phonetic word; focusses on the meaning the word denotes; and is open to further

experience. The child's environment in the home and in the school is usually one which is nurturing and supportive, socially and psychologically. The outcome of these different patterns of social relationships *cum* speech type is a differential cognitive ability accruing to such an individual. The contribution of such a theoretical orientation to the study of bilingualism is in the consideration of the influence of social forces on the patterns of social relationships, and the social interactions in the home and within the speech community. The Bain study, although emphasizing the importance of social experience, was not addressed to the effects of specific cognitive styles on cognitive outcome. Moreover, this study merely identified the problem areas, it did not explore in depth the relationship of the various social, cultural, and psychological dimensions in language and cognition. One major problem area which is particularly relevant to this study, concerns the issue of language(s) of unequal status.

Skutnabb-Kangas and Toukomaa (1976) did an extensive study on the phenomenon of "semilingualism." A semilingual is defined as the individual who can speak neither the mother tongue nor the host (second) language fluently. Semilingualism does not approximate the different types of bilingualism as discussed in Bain's (1977) study, although it bears descriptive similarities with Bain's category of "disruptive bilingualism." The difference in these two concepts lies in their particular theoretical orientation. The semilingual phenomenon occurs only within a bilingual, usually within a diglossic context, never within a unilingual context. Socially defined, it refers to a diglossic setting where a mother tongue is spoken within a sub-cultural community, and where there is no accessibility to the development of the reading and writing skills in this

language. In this same community all inter-cultural affairs with the host society (one of which is schooling) is conducted in the official, second language. These researchers analyzed the quantitative and qualitative aspects of language in semilingualism. They found that in the quantitative measure of language, where a semilingual child is measured against unilingual norms, such measures did not do justice to the communicative competence of this child, rather it showed the linguistic incompetence (i.e., with respect to the domain of vocabulary) of this child. In the qualitative measure, where the more universal aspects of language (i.e., as a means of thought, volition and emotion) was measured, the researchers encountered the problem of defining what constitutes an appropriate measure. In the end, they compared the result rather than the medium of communication between unilinguals and semilinguals. They concluded that the study of semilingualism is fraught with problems, not only in the domain of socio-linguistics, but also in the pedagogic and societal domains. Their study calls attention to the kinds of social circumstances which produce semilingualism. It also emphasizes that in the analysis of differential cognitive behaviours, researchers should look at social structure as the cause, and not semilingualism as the cause of poor school performance. The de-emphasis of the individual and the re-emphasis of the social structure as a cause of differential scholastic performance have re-oriented the direction of this area of study. Semilingualism is a concept which deserves more recognition in the area of the psychology of language. It is the intention of this thesis to provide the phenomenon of semilingualism more theoretical and empirical substantiation. This would also provide a timely integration of the broader concept of social structure into the field of psychology.

The Minority Experience

Minority experience pre-supposes a concurrent majority or dominant experience. To understand the minority experience, one would have to juxtapose it beside the dominant experience, in order to define these two kinds of experience.

Dominant or majority are synonymous terms used to describe certain phenomena in a particular group of people within a community. Since the majority may or may not comprise a numerical majority, the term dominant is considered here as more appropriate.

The dominant group usually comprises the group of people who are characterized by specific physical and social/cultural attributes. In North-America, and particularly in Canada, these dominant characteristics refer to "white skin, English-speaking background, and Christian ancestors who emigrated to Canada from a Western European industrial nation" (Elliott, 1971, p.1). To be dominant, then, implies power and superiority, both in the social and economic sense. It is agreed (Elliott, 1971; Marden & Mayer, 1973; Stacey, 1976; and Vallée, 1975) that the distinctive culture and physiognomy of this specific group give such individuals the opportunity to maximize on their specific group interests. Members of this group share a common culture arising from a common history. The culture of the dominant group is synonymous with the mainstream culture to be aspired to, and to be transmitted via educational and institutional systems and the various means of mass media (such as radio, television, newspapers and magazines). This group holds a superior position in the society, usually as a result of their status of being the conqueror. This group has the authority to exert influence on other members of the society at large. It possesses or controls the bulk of power within the

particular society, in the social, economic and political domains. These phenomena approximate Wever's and Stacey's definition of the "middle class." In other words, this group sees itself as the model for the society, and it possesses the appropriate and desirable characteristics that call for perpetuation.

"Minority group," on the other hand, refers to the group of people who are set apart from the dominant culture because of their physical and cultural differences. Examples of these distinguishable characteristics are: skin colour (most dominant), national origin, language, religious beliefs, dress (Elliott, 1971). An ethnic minority, furthermore, encompasses the cultural ethos, that is, values, expectations, symbols of a specific group, these being the prime distinguishing cultural characteristics (Marden & Mayer, 1973).

Members of such a group usually hold an inferior or subordinate position which is imposed upon them by the society at large (Vallée, 1975). They are usually unable to fully participate in the life of the mainstream culture. They are subjectively aware of their differences. Membership in such a group is transmitted by rule of birth, which is capable of affiliating successive generations, sometimes even in the absence of apparent physical and cultural traits (Elliott, 1971). An example of this phenomenon in Canada are Jewish-Canadians and Ukrainian-Canadians. The majority of them are physically invisible and culturally assimilated. However, by virtue of their names, their cultural heritage is identified.

There is always an implicit meaning attached to being a member of a minority group, which results in the member having to occupy "a relatively disadvantaged power position in the Canadian social structure" (Elliott, 1971, p.1). This is contrary to a predominant view that

Canadian society is egalitarian, democratic. In spite of an idealistic belief in justice and equality, Canadian society suffers from ethnic and social class prejudice and discrimination, although this is subtle and difficult to make explicit. John Porter (1965) in his analysis of Canadian society, identified the phenomenon of the "vertical mosaic." For the ethnically different, the position he/she occupies is often at the base of this mosaic. Minority status is an imposed status. It perpetuates itself so long as the dominant group possesses the political and economic power which grants it the opportunity to sustain its privileged position (Marden & Mayer, 1973).

A minority group, by definition then, is a disadvantaged group due to its powerless economic situation within a society. Implicit in this minority experience is the lack of control over its own destiny, and its perpetual experience with prejudice and discrimination. An ethnic minority group, is further advantaged due to its physical and cultural visibility.

The Chinese-Canadian as an ethnic minority group. Applying the definition of minority people, the Chinese-Canadians can be considered as an ethnic minority. A number of studies have affirmed this status (Hughes & Kallen, 1974; Palmer, 1970; and Voisey, 1970). In addition, these studies suggest that "Orientals" in general are an oppressed ethnic group, as evidenced by their experience of direct or subtle racial discrimination from the dominant group.

The Chinese cultural heritage; cultural values and expectations; the historical experience as a minority in a predominantly Caucasian society; and their unique concerns in cultural preservation, have all fostered a special image akin to the stereotype of the Chinese people (Charnofsky,

1971; Palmer, 1970; and Sue, Sue & Sue, 1975). Such expressions as the "silent minority," the quiet Americans or Canadians, the "model minority" are prevalent euphemisms applied to this specific group of people -- whether or not they fit into these images. Unlike other minorities on this continent (the Blacks in the United States, or the Native Indians in Canada), who are verbal and who make their presence felt, the Chinese have been content to remain in the background. They prefer to be left to themselves, and attempt to function in the existing social structure with a minimum of visible conflict with other members of the host society. These tendencies of behaviour act as a masking effect, which operates to distort and to obliterate genuine understanding of the Chinese as persons. The assumption that the Chinese people represent a model minority, according to Sue (1973), is derived from the Chinese population's strong emphasis on achievement, and their custom of keeping their problems within the confines of the family. This further strengthens the misconceived notion of the "model minority" and the presumption that this group has no problems.

Minority education. In Canada, the paucity of research concerning educational implications of ethnically different school children affirms that this has not been a main concern of the education system. The main concern with school authorities and the different levels of government has been the implementation of French/English bilingual programmes, rather than English as a Second Language (ESL) programmes (Greenfield, 1976). Unfortunately, in some school systems, ESL programmes come under the jurisdiction of "special education" or "learning disability." Such labelling could have devastating implications not only for educational performance of the minority children, but on their perception of their

own psychological and cultural identity as well. Sometimes this "ignorance" displayed by educational authorities in the administration of the programmes, and their lack of knowledge of the disparity between the home and school experiences (one of which is language) of minority children, have acted as a barrier against the understanding of their educational problems (Spolsky, 1972). Skutnabb-Kangas' and Toukomaa's (1976) concern on viewing language as an intervening variable, and societal structures as an independent variable, would supply refreshing insight into the age-old problem of poor scholastic performance among minority children.

In sum, minority experience, whether other-imposed or self-imposed, has a negative psychological effect on these minority groups, as well as having implications for their cognitive and intellectual development. The fault lies not so much with what education systems have or have not done, but in the general attitude and ignorance (perhaps unintentional) of educators in dealing with the administration of minority education. They tend to look at ethnicity as the cause of the differences, rather than social and cultural circumstances which are more appropriate. Perhaps one step towards the remedy of this predicament is to provide solid research evidence, along the line suggested by Skutnabb-Kangas and Toukomaa, which will force educators to re-examine the effects of socio-variables and minority status in cognitive development.

CHAPTER VII

RESEARCH METHODOLOGY

Introduction

The preceding chapters have provided the theoretical context, from which a comprehensive research plan was conceived in order to explore the implications of language, culture, social class, and cognitive style in relation to concept formation. The research plan consists of two parts: 1) an ethnographic study of Alberta and Hong Kong, and 2) the experimental research.

I. Ethnographic Study

A sociological-anthropological type of ethnography was devised in order to gather relevant data pertaining to the backgrounds of the subjects under study. As a consequence of living extensively in urban Alberta and Hong Kong, this researcher has found that although both locations are considered to be Westernized communities, there are distinctive socio-cultural differences which might account for any differential patterns in cognitive development. In the main, developmental studies in cognition have concentrated on a single culture or the comparison of two diversely different cultures, e.g., Bruner's studies have compared a Western culture with the culture of a developing country (African), MacArthur's have compared a Western culture with either an Inuit or African culture. This study examines the patterns of cognitive development of children growing up in two culturally different yet Westernized societies. As well, it includes the observation of children who have been exposed to two cultures.

"Participant observation" was employed as the main method in the collection of the ethnographic data. A secondary method included the use

of informants, unstructured interviews, home observations, as well as the incorporation of research documents.

Following Hoe's (1976) study, the methodology of "participant observation" was chosen in preference to sociological or anthropological measures for several reasons. First, this research method concerns the actual observation of life, experiences, sentiments and activities in progress among the people under study. Second, the flexibility of this method (from observation, to participation, to interviews and dialogues) offers useful insights into the dynamic relations between and among people within a society. Third, this method may provide more relevant and accurate, albeit rather "subjective" impressions of the people and issues under investigation. It is "subjective" in the sense that the observations are made by the researcher within a dynamic, personal context. Here, an assumption was made -- that the "subjective" is more relevant than the "objective" method in providing accurate interpretations within an ongoing social context. "Objective" data -- based on rigorous experimental procedures that would necessitate the isolation of variables under investigation, the separation of the experimenter's feelings from the observed process -- can limit the depth of interpretation. Like any research method, each method has its limitations, and participant observation is no exception. It leans towards the "subjective." Researchers of the rigorous, empirical orientation might object to the subjectively derived data and loosely structured nature of this method. This is to say, the researcher might be too actively involved in the whole social dynamic process to be able to divorce personal from social impressions. On the other hand, an "objective" researcher would have to stand outside of the context, and the impressions gleaned might be just an outsider's glimpse

rather than an insider's dynamic view of the process. At the same time, the researcher who is an outsider might not be cognizant enough of that particular culture, thus communication and interaction with the local residents could be rendered ineffective or socially irrelevant. Research conducted in the participant observation manner requires that the researcher possess the necessary skill and competence in research, proficiency in the relevant languages, a good knowledge of the culture, as well as sensitivity and diplomacy towards certain issues which are considered "touchy" by that particular community. In other words, all these limitations could seriously influence the effectiveness of the participant observation method. However, once the limitations are recognised and taken into consideration, then the researcher could proceed into the study with the necessary preparations and precautions.

In the case of this study, this researcher has spent about half of her life in urban Albertan (specifically Edmonton and Calgary), and the other half in Hong Kong where she was born and raised. The facility with both the Chinese and English languages, as well as a deep awareness and knowledge of the different social dynamics within these communities, has been productive. For this study, the researcher spent altogether twelve months in Hong Kong, and another twelve months divided between Edmonton and Calgary, for the purpose of collecting ethnographic information. The researcher lived with different families in these locations, and acted in the capacity of an education consultant to several schools, also acting in the roles of a babysitter, a private tutor, a "welfare worker," a counsellor, a "Girl Friday" in some community and church organizations, and as well as a family "friend."

The pertinent ethnographic studies of both Alberta and Hong Kong will be presented in the following chapter.

II. Experimental Study

Subjects

For purely statistical purposes, it would have been desirable to obtain large samples for research whenever feasible. As much as practically possible, this researcher has attempted to include a large sample. The originally planned sample consisted of 960 subjects, equally divided by sex, age, language-culture and social class. However, initial research in the field revealed that it was not possible to include representations of all these variables. The group which would represent the middle class Chinese-English bilinguals in Alberta, and the group which would represent the working class Chinese-English bilinguals in Hong Kong, had to be deleted, as no realistic representations of these groups could be found. In addition, school absences and incompleted tests reduced further the number of subjects. The final number of subjects was 626. These subjects are classified by geographic location, language, and social class status. They are also divided into three age groups: 6-7 years, 8-9 years, and 10-11 years. The final group classification is as follows:

		<u>6-7 yrs.</u>	<u>8-9 yrs.</u>	<u>10-11 yrs.</u>
1) Alberta: Anglo, middle class:	(M)	17	16	15
	(F)	14	15	16
2) Alberta: Anglo, working class:	(M)	20	16	19
	(F)	20	18	18
3) Alberta: Chinese-English, working class:	(M)	26	17	25
	(F)	21	19	29
4) Hong Kong: Chinese-English, middle class:	(M)	15	15	15
	(F)	20	20	20

		<u>6-7 yrs.</u>	<u>8-9 yrs.</u>	<u>10-11 yrs.</u>
5) Hong Kong: Chinese, transition working class:	(M)	15	15	15
	(F)	15	15	15
6) Hong Kong: Chinese, working class:	(M)	16	15	15
	(F)	14	15	15

Each of these groups was selected by the local boards of education. The locations and, to a certain extent, the types of school were generally indicators of social class status of the students. In Alberta, the middle class subjects were located in schools in the suburban areas, whereas the working class subjects were located in schools in the inner city areas. In Hong Kong, the type of school rather than its location is often an indicator of social class status. The middle class subjects were located in private, Anglo-Chinese primary schools of acknowledged repute in the quality of education, where instruction is in English. The "transition working class" subjects were located in schools which provide a relatively "progressive" type of education, ran mostly by church missions. The description of this particular class will be presented in the following chapter. The working class subjects were located in a school that was sponsored by a charitable organization, and the teaching method was relatively "traditional," in which some teachers do not even possess a teaching certificate.

For both the Albertan and Hong Kong children, all those who were rated by their teachers to be above the second quartile (50th percentile) and below the fourth quartile (100th percentile) in their scholastic achievement, were included in the study. Students with learning, psychological or physical (such as visual and hearing) handicaps were eliminated from participation. In other words, all the subjects were considered to be average and normal children.

Social Class Status

It has generally been acknowledged that the locality of the school is a reasonable indicator of a certain social class status of the local residents (Stacey, 1976). Besides the schools' locales, a more rigorous measure was also applied in the estimation of class differences. The social class status was an adaptation of the Blishen's (1975) scale. Blishen had constructed a scale based on the estimated income, the type of occupation, and the estimated level of education. For an adapted version of Blishen's social status classification, see Appendix 1.

For the purpose of this study, three classes of social status was employed: 1) middle class; 2) transition working class; and 3) working class.

Schools were selected by local school boards based on the approximation of class described by the experimenter. In Alberta two classes were represented: the middle class and the working class. In Hong Kong three social classes were represented: the middle class, the transition working class, and the working class.

Unilinguality/Bilinguality

One independent variable in this study is language, or more accurately linguality or the degree of bilinguality. In order to estimate this measure, appropriate criteria from the studies of Bain (1975), Fishman and Cooper (1969), and Skutnabb-Kangas and Toukomaa (1976) were employed. A 4-point scale was constructed (see Appendix 2). The scale denotes four classifications: (1) unilingual; (2) semilingual; (3) compound bilingual; and (4) fluent bilingual. The estimation of linguality was based on teacher interviews, self reports of the students, and an experimenter interview. First, the teachers were asked to assess a child's linguality

according to the scale. Second, the scale was briefly described to the child, then he/she was asked to assess his/her own linguality. Third, the experimenter assessed the child's linguality by means of an interview. In this interview, the experimenter engaged the child in a conversation concerning everyday topics on Chinese or Western (or Canadian) traditions and behaviours. This was conducted alternately in both Chinese and English. Any child who understood and responded consistently in only one language is classified as a unilingual. Any child who understood and responded poorly in either or both languages is classified as a semilingual. Any child who understood both languages, responded passively in the weaker language or responded in the dominant language, is classified as a compound bilingual. Any child who was capable of understanding and responding effectively in both languages is classified as a fluent bilingual.

Biographical Information

An interview of 10-15 minutes was conducted with each child before the actual testing session. The purpose of the interview was twofold. First, this was the occasion to establish rapport with the child. Second, to acquire the relevant biographical information from the child. The second part of the interview was based on a biographical questionnaire (see Appendix 3) comprising data on the child's family background. This provided pertinent information on the social dimensions of: sex and age of the child, residence locale, number of siblings, parents' educational background and occupation, language(s) spoken at home and with whom these language(s) are used, and the types of family activities in the home.

Choice of Tests, Administration of Tests, and Scoring Procedures

The purpose of this study was to investigate the processes involved in concept formation. Therefore, it was considered prudent to employ

individual testing as much as practicable, particularly for the test of concept formation. Three tests: two of cognitive style -- Sigel Cognitive Style Test (SCST) and Witkin's Embedded Figures Test (EFT), and one of concept formation -- the Vygotsky Blocks (VB), were administered to all the children. For the two younger age groups, all tests were administered individually. For the older age group, two tests which were conducive to group testing were administered in group settings, while the concept formation test was administered individually.

Test 1 -- Sigel Cognitive Style Test (SCST)

The SCST (1976, revised version, personal communication from Sigel) was administered individually to the 6-7 and 8-9 year olds, and group administered to the 10-11 year olds. These administration procedures were considered necessary. For the younger age levels, due to their relatively undeveloped written and verbal skills, individual testing would yield more accurate data.

Data on reliability and validity are not readily available from the test manual. However, they are cited by Gray and Knief (1975) as moderately high, with internal-consistency reliabilities at .79, .80, and .80 respectively for categorical, descriptive and relational responses; and .75, .77, and .80 for test-retest reliabilities respectively for categorical, descriptive and relational responses.

The revised format of the SCST consists of 14 triads of pictures of stimulus objects, excluding the trial item. These items are "photographed" items and do not display sufficient clarity for young children. A slight modification in some items of the revised version was found to be necessary, to eliminate cultural differences in the familiarity with the objects depicted, as well as the problem of non-clarity. Consequently,

hand-sketched drawings with clear outlines of identical objects were substituted for the photographs, to ensure clarity of the stimulus materials, as well as to eliminate the ambiguity some photographs might present. Following Chiu (1972), items which were found to be culturally biased were substituted. Chiu reported high reliability for this modified version. In this study, the Chiu's modified version was adopted.

The basic administration procedure for the SCST was followed. The subjects were required to pick out any two out of the triad of pictures that "go together, belong together, or are related in any way" (Sigel, 1976), and to give a reason for each choice, within a set time. Subjects were asked to provide as many pairings as possible from a single triad of pictures. Answers were tabulated according to the descriptions of each category provided in the instruction manual. These were then converted to a format appropriate for statistical analysis. The frequencies of responses in each category, converted to percentages, was used.

Test 2 - The Embedded Figures Test (EFT)

The Children's EFT (CEFT), a more elementary version of the EFT, was administered to the 6-7 and 8-9 year olds. The Group EFT (GEFT), similar to the EFT in format, was administered to the 10-11 year olds. The GEFT is considered more appropriate than the CEFT for this group as their age and educational experience would render the CEFT too elementary (Witkin, Oltman, Raskin & Karp, 1971).

Both the CEFT and the GEFT are considered to be good test instruments, with high reliability (r from .61 to .92) and relatively high validity as measured by correlational and factor analytic studies reported in the Witkin et al test manual (1971). Besides, data on age norms are readily

available on the instruction manual.

The CEFT consists of pictures of familiar objects used as complex figures (or ground). Embedded within these figures are simple forms (e.g., a triangle or a house) which the children are required to disembed from the picture. The children are given practice trials for each of the different simple forms, in order to gain sufficient familiarity with the shapes. The CEFT is not a timed test, since most young children would either find the simple form or abandon the search within a moderate period of time (Witkin et al, 1971). A correct response is scored 1, an incorrect response is scored 0. The total score is represented by the number of items correctly passed. The maximum possible is 25.

The GEFT is an adapted version of the original EFT, designed for facility in group administration, which is more practical when large numbers of subjects are involved. The GEFT is composed of intricate geometric figures with simple forms embedded in them. The subjects are required to disembed the simple forms from the complex figures in a single 20-minute testing session. A correct response is scored 1, an incorrect response is scored 0. The scoring procedure was modified to include some of the more complex trial items. The total score possible is 25.

Test 3 -- Vygotsky Blocks (VB)

The VB is essentially a clinical and research instrument. It serves as a measure of an individual's relative level of cognitive functioning in concept formation. Studies utilizing this instrument have generally assumed its validity (Ghuman, 1975; Harrington, 1969; Stewin, 1968; Stones, 1970; and Stones & Heslop, 1968).

The VB consists of 22 blocks of two different sizes and heights, five colours, and six geometric shapes. They can be grouped into four

categories, with a nonsense syllable representing each category: Lag for tall large blocks, Mur for tall small blocks, Bik for flat large blocks, and Cev for flat small blocks.

For this study the method of administration and scoring was adapted from Semeonoff and Laird (1952), and Penny (1951). Harrington (1969) and Stewin (1968) in their respective studies have both attested to the relative merits of the Penny method of administration and scoring; while Ghuman (1975) has used the Semeonoff and Laird method and found that it takes into consideration the quality of the solution. As this study is concerned with "how" children form concepts, and how this process can be measured fairly objectively to include the quality of solution, a combination of the two methods would be valuable. Thus, it would provide standardization in the administration procedure, as well as the objective scoring criteria. The modified administration procedure is provided in Appendix 4. The modified scoring procedure is provided in Appendix 5.

The battery of test, with the modifications noted above, has been verified and operationalized in a pilot study; and found to be productive in an extensive follow-up study (Yu, 1977).

General Problem and Hypotheses

Based upon the preceding discussion, a general problem is generated for this study. Formally stated, the problem concerns the consequences of socio-psychological experiences and effects of cognitive style on cognitive development. Both the perceptual and conceptual dimensions of cognitive style, as well as the process of concept formation are adopted as the means of assessing cognitive outcome. The main focus of this study is the differential cognitive performance in various socio-cultural-speech communities.

The groups involved in this study are: 1) Albertan middle class English unilinguals (AME); 2) Albertan working class English unilinguals (AWE); 3) Albertan working class Chinese-English bilinguals (ACE); 4) Hong Kong middle class Chinese-English bilinguals (HCE); 5) Hong Kong transition working class Chinese unilinguals (HTC); and 6) Hong Kong working class Chinese unilinguals (HWC).

Eight working hypotheses are generated from this general problem.

First, there is a correlational relationship between performance on the two cognitive style tests: the CEFT/GEFT and the SCST.

Second, there is a correlational relationship between performance on the perceptual *cum* conceptual tests (EFT and SCST) and the performance on the concept formation test (VB).

Third, sex differences have an influence on the measures of cognitive style and concept formation.

Fourth, age differences have an influence on the measures of cognitive style and concept formation.

Fifth, linguality differences have an influence on the measures of cognitive style and concept formation.

Sixth, cultural differences have an influence on the measures of cognitive style and concept formation.

Seventh, social class differences have an influence on the measures of cognitive style and concept formation.

Eighth, there are between-group differences in performance in the cognitive measures of cognitive styles and concept formation.

Statistical Analysis

As there are several main purposes of this study, accordingly, different statistical procedures need be applied in order to obtain

relevant data for interpretation.

The Pearson Product-Moment correlation formula was used to obtain correlations: first, on the two measures of cognitive style; and second, to obtain correlations of the concept formation test with the two measures of cognitive style. This data is presented in a correlation matrix.

The one-way analysis of variance was used to determine significant differences between and within groups in their cognitive (dependent) measures, with the variables of sex, age, linguality, culture, social class and group. If sex were found to be uncorrelated with cognitive style, then it would be collapsed for analysis.

Lastly, the Newman-Keuls and Scheffé tests were applied in order to obtain significant differences within groups in a ranked order, in their performance on VB. Thus, a profile on the different groups of subjects could be produced, based on their cognitive performance.

CHAPTER VIII

ETHNOGRAPHIES OF ALBERTA AND HONG KONG

Introduction

This chapter will present ethnographic studies of two settings: urban Alberta and urban Hong Kong. The main objective of an ethnography is to furnish the readers with socially and culturally relevant information on chosen geographical locations where data for the study was collected. This information could generate better understanding of the people situated in their particular historical, socio-cultural milieux; thus, meaningful interpretation could be made on the results based on the experimental (psychological) data.

This chapter is divided into two sections: 1) Alberta, and 2) Hong Kong.

I. ALBERTA

Physical and Cultural Geography of Alberta

Alberta is a vast expanse of land stretching from the 49th parallel to the 60th parallel in the north -- a distance of 756 miles, and averaging 300 miles in width. It is situated directly on the eastern slopes of the Rockies and is the western-most of the Prairie provinces of Canada.

Due to its proximity to the mountains, parts of the land are high in altitude -- from over 12,000 feet to about 700 feet. Alberta is a land with a multitude of landscapes and geographical features -- from the ruggedness of the perennially snow-capped mountains in the west to the gently sloping flat lowlands in the east where once wild buffaloes roamed. The plains are part of the Canadian Shield extending south from the Hudson Bay. Its soils are ideal for agriculture, as well as rich in energy and mineral resources. It was its agricultural potentials which

first attracted settlers to this land.

The population of Alberta -- 2,082,895 (Bureau of Statistics, 1980) -- is dispersed in the numerous municipalities (11), towns (103), and villages (167) throughout the province. With the migration of the population to urban areas in recent times, the urban centres have now become the nuclei of the province. They comprise 75% of the total population. Metropolitan Edmonton has a population of 598,995, while Calgary has 530,816. It is in these two cities that the Canadian portion of this study was conducted.

Unlike any other metropolitan areas in Canada, both Calgary and Edmonton have developed a distinct Albertan characteristic. This characteristic dates back to the turn of the century, when Alberta was isolated as a frontier land.

Historic Alberta -- Turn of the Century to 1940s

Before Alberta was inaugurated as a Province within the Dominion of Canada in 1905, it was populated mostly by native Indians and the occasional fur traders. Later, pioneers came in droves to Alberta, lured by the promise of free land. At the time, anyone who was capable of establishing a homestead was entitled to the land. In the main, these homesteaders or settlers were mostly farmers and ranchers; however entrepreneurs and individuals with the "frontier" spirit (an example of which was the missionaries) were not uncommon. The dominant group of people were of British descent from Ontario and the British Isles. The remainder of the population was made up of European immigrants, Americans, and a few of the "Unmeltables" such as the ethnics -- one group of which was the Chinese. This latter group settled mainly in southern Alberta, particularly in Calgary (Voisey, 1970) after the completion of the

Canadian Pacific Railway in 1885.

To most of the settlers the Old World was but a distant memory and the present was fraught with hardships. The future became the inspiration of their labours. The "Wild West," and Alberta in particular, became known as the "land of the tomorrow seekers," a name which is still relevant today. In the old days, migrants were drawn to the land, now they are drawn to the rich energy and mineral resources in the soil.

The founding fathers of the Province emphasized the motto of free land and free enterprise -- of which the latter has become a part of the political and social ideology. In order to curb the wild pioneer spirits, the Christian ethic (brought in mainly by the British) was held as a virtue by the citizens. The blending of free enterprise and Christian ethic has since become a special characteristic in Alberta. However free enterprise was not always available to all, and neither were all settlers Christians. The social organization was such that those who were capable of handling free enterprise and were at the same time Christians came to rule the land.

The Albertan society was basically agricultural, run by farmers, ranchers, and entrepreneurs. They were considered by Macpherson (1970) as a "petit bourgeois" class. Although the prevailing attitude was "classlessness," that is, without the strict social stratification as in their home countries, yet class was still quite discernible (Marsh, 1970). "White collar" personnel such as entrepreneurs, small business managers, technicians and professionals mostly came from urban areas in southern Ontario, the United States, Britain, or Western Europe. In the main, these people were generally English-speaking, long-time residents who considered themselves to be "cultured," and who had little trouble

assimilating into the Canadian life. On the other hand, the "blue collar" personnel were those who generally "live off the land" (in agricultural development) and who were hired in construction projects. These were mostly the more stockily built, southern or eastern Europeans. The Chinese, being lower on the social scale than the "blue collars," were denied jobs that were reserved for the whites. They took jobs that were rejected by their white counterparts, jobs such as labourers, domestic servants, laundrymen, gardeners, or cooks. Because of their physical distinctness, their strange language, and foreign ways of behaviour, the latter group was said to be the unassimilables in the Canadian society, to be treated with suspicion and scorn. This attitude fostered the increasing isolation of this group, the result of which was the development of a distinctive Chinese-Canadian sub-culture in Alberta.

Of the Chinese who settled in Alberta, most of them originated from the rural regions (Sze Yap) of Guangdong province in China. They emigrated in the wake of famine and political upheavals in their native land. On arrival in British Columbia, and later in Alberta, they were confronted with anti-Oriental sentiments and hostile realities, which made it necessary for them to band together (by creating Benevolent Societies) for self-preservation and protection. Their stressful experience with the host society quickly taught them to keep to themselves, to avoid trouble as much as possible, to maintain a low profile, and to be cautious of non-Chinese. These attitudes, plus the stereotypic image of a heathen, hard-working group who are poor with words but facile with numbers and their hands, became the trademark of these Chinese immigrants.

To their Canadian hosts, the Chinese behavioural patterns represented the vice and iniquity to be abhorred. While the middle class whites felt

that the practice of segregation was called for, their working class counterparts at times found it necessary to vent their animosity in overt violence towards the Chinese, who were seen to be competing for their jobs. The working class perceived the Chinese as an economic threat to their existence. Thus the "Chinese Question" or the "Yellow Peril" not only became a social but also a political issue in Alberta. It is only in their Christian upbringing and their British notion of "fair play and justice" that kept their resentment from exploding into serious consequences (Palmer, 1970).

Social life during the frontier days was distinctly divided by class, and by ethnicity. The conscious melange of different ethnic groups was a rarity. The British, being one of the chartered groups in Canada, and the dominant group in Alberta, was the group to look up to in terms of social values, life style, and etiquette. Generally, the middle class maintained the style of life they had known, which was concurrent with that of Victorian England, with only a few modifications. As the group highest in esteem, they had access to more influential (in terms of power) positions, jobs, and educational opportunities in the community. For the less privileged working class, much of their livelihood depended on hard labour and the economic system that was controlled by the middle class. In terms of educational opportunities for their children, these were based on the accessibility of the schools. That is to say, if the workers' children happened to live within commuting distance, then school was available to them. Bussing was not even heard of or conceived. At the time, there were a few schools for immigrant children, solely for the purposes of teaching the English language, as well as instilling in these children the proper Canadian behaviours, for eventual

assimilation of these groups. Educational opportunity for the Chinese was remote, as the majority of them were single men or "married bachelors" (those who had left behind their wives and families in China) intent on scraping a living. For the handful of Canadian-born Chinese, although school was available to them, some of the parents feared for their physical safety amidst racial discrimination, and preferred to keep their children at home, or secured private tutorship, or even sent their children back to China for an education. Consequently a school was established in Toi Shan (China) for these children and children of overseas fathers (Personal communication, Edmonton Toi Shan Society).

From the 1920s to post-war 1940s, Alberta experienced both social and economic upheavals, from boom time, to the Great Depression in the 1930s, then the World War and then the more stable and affluent times following the war. Social conditions had generally improved from the early pioneer days, with the discovery of oil and gas, and the implementation of electricity and mechanization. However, with the rise in population, the work force became quite competitive, at times resulting in labour strikes. During the 1920s, it was the Chinese, as cheap labour, who became the brunt of the workers' hostilities. As a result the Chinese Exclusion Act was passed in 1923 in order to prevent the entry of any more Chinese, even family members. The hope of unification of families was temporarily dashed. Up until the late 1940s, this was the darkest chapter of the history of the Chinese-Canadians. Families were separated for years, some for as long as thirty years. This separation greatly disrupted the social and psychological development not only of the Chinese immigrants but of their families in China as well (for a detailed study, see Hoe (1976)). In Alberta the Chinese were barred from any social or

political participation in the community. Often Chinese workers were subjected to gross discriminatory practices. These acts distanced the Chinese from the mainstream Canadian life and imposed further isolation. It was not until 1947 that this inhumane practice was repealed and the Chinese Exclusion Act abolished. Now, the unification of family members was made possible. The arrival of the family members brought joy as well as sorrow. The extended separation brought tremendous problems of adjustment, both social and psychological, among these Chinese families. The legacy of this still haunts the Chinese-Canadians today.

The post-war economic wind of change brought in improved conditions for all Albertans. Everyone was intent on constructing and expanding the community. With the improvement of the quality of life, even for the working masses, the attitude of a semblance of "classlessness" prevailed. For the first time in Chinese-Canadian history, this group experienced the change from isolation to "assimilation." Assimilation, however, does not come easily for this group, with a history of unjust treatment in the not too distant past, and the suspicion of their white hosts. Their image among Canadians had certainly changed. The post-war Chinese immigrants to the metropolitan areas such as Toronto, Montreal, and Vancouver, were, in the main, the Chinese who were more urbanized, better educated, and more skilled in trades and professions (Hoe, 1976). These images were, unfortunately, generally not the lot of Chinese in Alberta. The Chinese-Albertans kept quite close to their ancestral roots -- of traditional, poorly educated, rural China. The new breed of Chinese immigrants tended to gravitate to more metropolitan cities where they were used to the style of life. The Chinese who immigrated to Alberta during this period were usually the sponsored or nominated family members or relatives. It was

not until the mid-1970s that the cosmopolitan-oriented Chinese chose Alberta as their new home.

Contemporary Alberta -- from 1950s

Contemporary Alberta is urban-oriented, with three quarters of its population centred in cities. Its economy has diversified from an agriculture base to a resource (oil and gas) base. The latter has brought sufficient affluence to Albertans that they have come to see themselves differently from their provincial counterparts. Political policies, however, remain very much rooted in their particular history -- of conservatism and Christian ethicism. The belief of an "egalitarian" society still persists. The social and cultural environment in Alberta has generally been shaped by its people, and in turn it has shaped the lives of the people. The Albertan culture is strongly Anglo in orientation, based mainly on British traditions.

Demographic Profile

The last population census (Statistics Canada, 1976) revealed a profile of Alberta residents by various criteria; only the criteria of ethnic origin and mother tongue are concerned here.

Of the total population of Albertans, divided by ethnic origins, 47% are of British origin, and 0.8% are of Chinese origin. By mother tongue, 81% of the residents claim to be English-speaking, while 0.8% consider themselves to be Chinese-speaking. The statistics indicate that the predominant trend is Anglophone, and Chinese is but a small minority.

Social Stratification in Urban Alberta

Contrary to the wide belief in "classlessness" by most Albertans, the prevailing notion that "everyone belongs to the middle class" is a myth

(Porter, 1965). This myth is generated by the notion that the possession of "middle class commodities" (such as cars, washers-dryers, dishwashers, a home, etc.) is an indicator of material affluence synonymous with middle classness. This concept is further strengthened by the universal aspiration of possession of material goods by both the affluent and workers alike. However, disparities between these two groups do exist, even in affluent Alberta. These differences have been affirmed by social scientists (Downey, 1972; Poetschke & McKown, 1979; Rocher, 1975; and Vallée, 1975), as well as my own participant observation of the subject populations in the Alberta communities.

The change in the economy has spawned a "power for the cities" where economic bases are situated. Consequently people flock to the cities in search of financial security. This economic power is usually vested in the power-elites such as politicians, multi-national corporations (an example of which is the oil companies) and influential business enterprises (such as construction industries). Thus economic control is in the hands of these few. Although the earning power of the workers has improved substantially when compared to previous generations, yet with rising inflation, the gap between the "haves" and the "have nots" has widened. Recent statistics from the Canadian Council on Social Development (Edmonton Journal, June 3, 1980) reveals that in Canada, 20% of families at the bottom of the income scale still receive only 4% of the country's total income, while 20% of those with high income (over \$30,000) still take home about 42% of the country's income. Of the 20% low-income families, 15% of these live below the poverty line. For Alberta statistics, see Table 2. Such statistics have made people in general, and social scientists in particular, more aware of the class

TABLE 2
PERCENTAGE DISTRIBUTION OF FAMILIES
BY INCOME GROUPS, 1977*

<u>Income Group</u>	<u>Per Cent</u>	
	<u>Canada</u>	<u>Alberta</u>
Under \$3,000.	2.3	3.2
\$3,000 - \$4999.	3.9	3.4
\$5,000 - \$6999.	5.8	4.4
\$7,000 - \$8999.	5.6	5.6
\$9,000 - \$10,999.	5.4	5.7
\$11,000 - \$11,999	2.9	2.1
\$12,000 - \$12,999	3.2	3.1
\$13,000 - \$13,999	3.7	2.8
\$14,000 - \$14,999	3.5	2.7
\$15,000 - \$15,999	3.7	2.8
\$16,000 - \$16,999	4.0	3.1
\$17,000 - \$17,999	3.9	3.2
\$18,000 - \$19,999	7.6	7.3
\$20,000 - \$21,999	7.3	7.0
\$22,000 - \$24,999	8.8	8.8
\$25,000 - \$29,999	11.7	14.1
\$30,000 - \$34,999	7.0	8.6
\$35,000 and over	9.8	12.3

*From Statistics Canada, Income distribution by size in Canada, 1977. Ottawa: Queen's Printer, 1978.

differences that exist in our so-called egalitarian society.

Education in Alberta

Education has become a vital component of any industrial society. The ideology of egalitarianism and democracy is often reflected in societal values, aspirations, and expectations -- particularly in the education sector of society. Ideologically it means that education no longer is the privilege of a few, but the right of every citizen. It also implies that education is the equality of opportunities for all, in theory. This is the image that educational authorities want to portray, and the objective they aim to achieve. Consequently, education is considered as one of the dominant priorities in government spending.

In Alberta, although basic education (grades 1-12, kindergarten being optional) is compulsory and free (monetarily) for all school-aged children, the citizens have to pay their share in taxes in the financial support of the educational system. There is the general tendency for the government to emphasize post-secondary education rather than early childhood education in Alberta (Downey, 1972). In recent decades, inequalities of educational opportunities have been measured in terms of accessibility to higher education (Forcese & Richer, 1975). A close scrutiny of available statistics on social backgrounds of post-secondary and particularly university students would reveal a disproportionate percentage of these students coming from middle class backgrounds (See Table 3, Province of Alberta, 1976; for a detailed analysis, see Bumbarger & Friesen, 1977). Bumbarger and Friesen (1977) reveal in their study pertaining to the accessibility to academic courses and programmes -- which are indirectly related to the quality of education -- that the government adopts a "permissive" attitude; that is, it allows decisions

TABLE 3
POPULATION 15 YEARS AND OVER, BY LEVEL OF SCHOOLING
ALBERTA, 1976*

Level of Schooling	Total	Male	Female
Population 15+	1,334,905	674,925	659,985
Elementary and secondary only:			
Less than grade 5	46,415	23,210	23,200
Grades 5-8	197,025	108,265	88,755
Grades 9-10	257,000	129,410	127,590
Without high school certificate	233,040	109,375	123,655
With high school certificate	133,840	58,405	75,435
Post-secondary non-university only:			
Without certificate or diploma	105,580	55,770	49,805
With certificate or diploma	131,835	60,455	71,380
University only:			
Without certificate or diploma	66,310	36,920	29,295
With certificate or diploma	13,080	4,670	8,405
With Bachelor degree	59,405	35,240	24,170
With Medical degree	3,295	2,820	480
With Masters degree	9,525	7,245	2,280
With Doctorate degree	3,425	3,135	290
University and post-secondary only:			
Without certificate, diploma or degree	17,805	10,005	7,800
With non-univ. certificate or diploma	25,910	11,815	14,095
With university certificate or diploma	8,255	3,680	4,570
With Bachelor degree	17,440	10,015	7,430
With Medical degree	1,330	1,105	220
With Masters degree	3,535	2,665	875
With Doctorate degree	865	725	145

*From: Census of Canada, 1976, vol. 2, Bulletin 2.7, "Population: Demographic characteristics, School Attendance and Level of Schooling."

to be made at the school level. This practice permits variations in "operating constraints" of the schools. Essentially what this implies is that differences in educational practices are allowed. To take this one step further, it would suggest that those parents who are most concerned with their children's education could "influence" local educational authorities and pressure for particular actions favourable to their children. Inadvertently, difference in the quality of education is tolerated. The group of children who would suffer from this practice are usually those who come from the poorer sectors where parents seldom participate in the "democratic" process in educational concerns. Their main concern is economic security; education is usually a secondary concern, depending on the parents' own experience. These practices of government authorities, coupled with other social practices of the home, may implicate the child's developing mental orientation.

Family Life in Alberta

The quality of life, as in the domains of housing, daily activities within the home, and parent-child relationships, is very much a product of class stratification. For instance, in the domain of housing, there is the prevalent trend of middle class families living in single-family detached dwellings in middle-income neighbourhoods away from the city core. These dwellings typically consist of two or more bedrooms, depending on the size of the family and the wealth of the family. The mortgage on these homes is often paid from the income of the chief wage-earner of the family. In these neighbourhoods there is easy access to adequately equipped recreational and educational facilities, both for the adults and the children. Within the home, there is the presence of typical middle class commodities (e.g., colour television sets, stereo

equipment, labour-saving devices such as dishwashers, food processors, etc.) plus other luxury items as well. Resources for the development of hobbies are not uncommon in these homes, and quite often a room is set aside for leisure activities (e.g., a rumpus room or a den).

On the other hand, working class families usually reside in rental units, row houses, or single family units or attached units within the inner city or in working class neighbourhoods. In general these homes tend to be crowded, although the presence of middle class commodities are not unusual, and occasionally some of these families do own their homes. It is the way these commodities are acquired that differentiates them from their middle class counterparts. In the main, there is often more than one wage-earner in the family to help with financial expenditures. It is not uncommon to see the whole family striving for the acquisition of material goods. It has become a rule rather than an exception to see working mothers in these homes, unlike their middle class counterparts who are mainly housewives.

The life of Chinese-Canadian families is predominantly working class in status. In the main, they are concerned with survival in a dominant, white society, where suspicion and racial discrimination still exist, albeit in a more subtle form. There is a tendency for newcomers to congregate in areas of the city where inexpensive housing is accessible. For the more established, they tend to move to new areas of the city where they can rent or buy subsidized housing. (In Calgary, these Chinese immigrants tend to live in the North-east part of the city, e.g., Huntington Hills area; in Edmonton, they tend to live in Mill Woods and Castle-down/Londonderry area.) Although these neighbourhoods are relatively new, they are very much working class in composition. It would be erroneous

to imply that there are no middle class Chinese-Albertan families. These do exist, although not representative of their population. In the main, these latter families are the young (mid-20s to 30s), university-educated, professional class, who are new Canadians of less than ten years of residence in Alberta. Few of these have started families. In the Chinese-Canadian homes (particularly the working class), it is common to see extended families living under one roof, in crowded conditions. Superficially they attempt to adapt to the Canadian way of life, such as engaging in outdoor activities and leisure pursuits. Culturally they still maintain much of their Chinese traditions, in terms of kinship and social activities.

In the domain of daily activities in the home, generally there is a discernible difference between the middle class and working class Albertan families. Middle class parents tend to display a greater concern for their children's general development, the physical as well as the intellectual. As a large number of middle class mothers are housewives, they can afford to spend more time with their children. These mothers generally follow a prescribed or dominant trend in the care of the young. They take their children for regular visits to the doctor, follow a nutritionally approved diet, carefully select appropriate toys, keep reading materials in the home, and read to their children quite often. When their children are of the proper ages, they are sent to play schools (paying substantial fees) where they learn to interact with other children and be accustomed to school life. When they reach school age, apart from the schooling activities, usually a period of time is set aside for enrichment activities: in art, music, dance, sports, etc.. Parents even participate actively in the Home-School associations, and play influential roles in

the upbringing of their children, both at home and outside of the home.

For the working class parents, their main concern is with economic survival. The care of their children is often constrained by the time they could spend with them. A great portion of these children's day is spent outside of the home, at daycare centres or with babysitters where individual attention is necessarily divided. Qualitatively, the home is more impoverished, and the interaction with the parents is limited. The parents, tired from the day's work, can only attend to their children's physical needs; intellectual needs become less of a concern. In these homes, reading material is often scarce, for the adults as well as for the children. Toys are usually selected to keep the children occupied rather than to generate intellectual curiosity. During home visits (by the researcher), it was observed that a majority of these children spend extended periods of time watching television indiscriminately, or in unstructured activities. Often these children rely on their own resources in entertaining themselves, with their siblings or peer mates, at games that sometimes simulate what they have seen on television. It is rather rare to see parents reading to their children, or participating in their children's play or school activities.

For the Chinese-Canadian families, the care of the young differs somewhat from that of the working class whites. Often young children are placed in the care of other Chinese individuals, usually a grandmother or other close relatives who acts as the child's caretaker. There is a tendency for these caretakers to foster a traditional attitude of authoritarianism and dependency on the young (Bain & Yu, 1979). Although these children are well cared for physically and emotionally, there remains a gap, culturally and intellectually, between the home environment and

the mainstream Canadian life. This gap becomes a concern when these children enter school. The problem of adjustment arises from the differences in language, values, and expectations. For these minority children, the urge to become a part of the group is overwhelming, often to the extent where they feel the need to reject their own cultural heritage (particularly their language), and adopt a more conventional way of behaviour. The language issue, and the concomitant change in behaviour, often become a matter of contention in the home. Parents who are ill at ease with the English language often have to rely on their children to act as interpreters. This role changes the traditional family dynamics and upsets the balance in the home. On the one hand, these parents wish to maintain a cultural tradition in which they feel comfortable. On the other hand, it is their children who have to resolve the cultural differences between their own and the host community. The psychological dilemmas that are imposed on these children are often demanding: to choose between loyalty to the parents and to the peer group. For those children who have difficulty adapting to their new environment, school can be a somewhat traumatic experience. Unfortunately, their parents are often incapable of helping them academically or socially in any way because of their own linguistic incompetence. My own observations have revealed that a majority of these parents are engaged in service occupations (e.g., in restaurants, grocery stores), in which the work hours are not conducive to family life. As a result, their children often have to look after themselves after school hours. The interaction between parent(s) and children becomes severely restricted. Of a main concern to these parents is that their children be able to achieve well in school, as education seems to be the most favourable avenue to success. As one parent told

me: "If you are a Chinese in Canada, then you will have to be many times as smart, and work ten times as hard as the average Canadian, if you want to get ahead in the Canadian society." This sums up the attitude of most Chinese parents towards the development of their children. The implications of minority social status, differences in language, values, and expectations all play a part in the social, psychological, as well as the cognitive development of Chinese-Canadian children.

In sum, an ethnography of urban Alberta was presented. Its main objective was to present an historical and contemporary perspective of the social and cultural life of Alberta's citizens. Ideologically, in the social and political spheres, the pervasive belief in equality and democracy is generated by both the government and the majority of the people. Economically, the preference for a free enterprise economy has shifted the bulk of power and influence to the power-elites. And practically, different social practices are adopted based on class differentiation. Although education is considered as a high priority item by the government, yet its unequal distribution has furthered social inequality in the Alberta society -- which contradicts the dictum of government policies of equal opportunities. It is in the educational domain that the focus of this thesis lies. It is hoped that by observing different social practices within a community, more meaningful interpretation of differential patterns of cognitive development in children could result.

II. HONG KONG

Physical and Cultural Geography of Hong Kong

The British Crown Colony of Hong Kong is situated at the mouth of the Pearl River on the south-east coast of China. It is comprised of Hong

Kong Island and the small Kowloon peninsula, plus the leased land in the New Territories which includes some 235 outlying islands. The total area is barely 390 square miles.

Geologically, Hong Kong is made up of barren, rocky land masses, with a naturally indented coastline ideal for shelter for shipping. The land is composed of mostly steep hills, rising as high as 3000 feet. The effect of erosion, and the type of soil (mostly volcanics, porphyries, and granite) render the land almost unfit for agricultural purposes. As a result, the only available lowlands -- along the coast and in small valleys -- have to be divided for both the purposes of agriculture and habitation. Hong Kong Island and the Kowloon Peninsula are mainly for residential purposes, while the flat lands in the New Territories are for agricultural purposes.

Being within the tropical belt, Hong Kong has a monsoon type of climate: a long, hot and wet season (from May to October) and a cool and dry season (from October to May). Although the growing season for vegetation is year-round, the availability of land has greatly restricted self-sufficiency in this domain. Hong Kong has to depend on neighbouring China for its main source of food, and on other countries for other raw material resources.

Hong Kong's climatic conditions, and its seasonal typhoons, seriously affected navigation in the China Seas in the early days. It was considered to be a useless piece of land, unfit for habitation (Endacott, 1973).

The population of Hong Kong today is close to five million. It is dispersed throughout the Colony, with a heavy concentration of the population on the Hong Kong Island and the Kowloon Peninsula. In recent years land has had to be reclaimed from the sea in order to provide more land for its

steadily growing population. New towns and satellite cities are built in outlying areas for this purpose. Hong Kong is now considered to be one of the more cosmopolitan cities in the world. It has come a long way from its humble beginnings.

Historic Hong Kong -- mid-1800s to 1950s

A piece of barren rock -- which was the beginning of Hong Kong -- could hardly attract any settlers. The early inhabitants were mostly seafaring people, some fishermen, and a great number of pirates who terrorized the South China Seas. The history of Hong Kong really began with the coming of the British to the Orient, in the mid-1800s.

The discovery of the Orient in the sixteenth century, particularly China, by sea, opened trade relations between China and the West. Western traders were lured to the East by its richness in spices, tea, and silk. By the eighteenth century (the industrial era) the British had become interested in trade with China, mainly for her tea. The trade conditions at the time were much to the dissatisfaction of the British. Any trade had to be negotiated through the Co-Hongs, a loosely organized group of Chinese merchants established to deal only with the Westerners. Through the Co-Hongs, the Chinese Imperial Government collected its share of revenue from overseas trade. Foreign merchants had to abide by the rules established to regulate communications. No foreigners were allowed to deal directly with the mandarins. They were not allowed to go beyond their confined territories. Up until this time, China had no diplomatic relations (on equal terms) with any other nation. The prevalent Chinese attitude was that China was superior to other foreign nations, since China had no need for foreign products. Trade with the West was granted only as a favour to those who sought trade. The Chinese stipulated that

their laws must be adhered to by the foreigners, or they could leave the country. The British, being the master mariners among European nations, were becoming increasingly dissatisfied with the trade regulations. They sought direct communication with the Chinese mandarins, in order to establish diplomatic relations with China on an equal footing. It was this diplomatic contact that the Chinese would not consider at all, as this would mean an admission of the British claim to equality. China's unrealistic attitude towards foreign nations -- particularly her lack of realization of the intellectual and scientific revolution that was going on in Europe -- eventually proved to be her downfall.

The British realized that the only way to push for equal treatment was by force -- in the strength of their ships and their mighty weapons. An incident occurred which changed the tide of Anglo-Chinese diplomatic relations. In the mandarins' zeal to eliminate the opium habit (brought in mainly by the British) habit among the Chinese, they burned all the opium cargo in Canton. This started the infamous Opium War. The confiscation and the incineration of the opium gave the British the excuse they had been waiting for. Under the pretext of protecting British citizens, they attacked China. In the state of siege that ensued, the British were able to defeat the outmoded Chinese fire-rafts. To compensate for their loss, the British demanded indemnity as well as the cession of "a properly situated island where British subjects should not again be exposed to violence" (Endacott, 1973, p.15). As a result, Hong Kong was ceded to Britain by the Treaty of Nanking, in 1842, and declared a British Colony on 26th June 1843. Kowloon was later ceded in 1860. The new government stipulated that all British subjects and foreigners were to be subjected to British laws and protection, while the natives of the island and China

were to be under the jurisdiction of Chinese laws -- subjected to the control of a British magistrate. This meant that for the latter group, the laws would be interpreted by the British. This practice later helped to entrench power in the hands of the British. Although the official British attitude towards the Chinese was to tolerate them, in practice regulations were passed which discriminated against them. Harsh punishments were meted out to those who broke the laws (which were loosely defined). Subsequent animosities between the British and the Chinese became rooted in these incidents.

Initially, the Colony faced many difficulties, as it was peopled by the least attractive elements of both the British and the Chinese (e.g., adventurers, seamen, and pirates), which made the maintenance of law and order a problem. As the Colony grew, more opportunities were opened. Hard times in China (famine and political unrests) made Hong Kong an attractive haven. Chinese workers began to arrive to seek work as construction labourers, artisans, and small business entrepreneurs. Like their counterparts who later migrated to North America at the end of the nineteenth century, these Chinese were mostly single men and married bachelors. They came for monetary reasons and intended to return to China once they prospered.

Development of the Colony during the early years was sporadic. Although the population increased, it remained relatively stable. There was rapid social development to meet the needs of new settlers (and to maintain a semblance of order and justice). However, economic progress was painfully slow. Hong Kong society was a segregated society, dominated by the British and wealthy foreigners. These groups developed a strong social life, along the same line as the one they enjoyed in Europe. Following

the Europeans, came the East Indians, who were brought in to strengthen the police force. The East-Indians also had their own community. The natives, or the Chinese, were at the bottom of the social strata. They were despised and scorned by the foreign communities as inferior beings (mostly as a result of the prevalent crime rate among them, and the poor conditions they lived in). Each of these ethnic communities was cloistered in its own social world, each pursuing the objectives which had initially brought its residents to the Colony.

By the second half of the 1800s, Hong Kong was firmly established as a trading post. Its residents, foreigners and natives alike, were mostly transients rather than permanent settlers. Both these groups were content to be governed by a government that graciously allowed them to pursue free enterprise with minimal interference. Hong Kong, being acquired as a Colony after the heyday of Colonization, was not typical of its sister colonies elsewhere under the British Empire. It was acquired mainly for the purpose of expanding British trade in China. In the Colonial government, both politically and economically, the practice of laissez-faire was promoted. The Chinese residents, particularly the merchants, recognised the benefits of such a system. In the inter-group relations, which were purely economically based, each group established an unwritten set of regulations which were economically beneficial for themselves. At the same time, each recognised the advantage of economic co-operation.

With the growth of population, the semblance of a society began to emerge. Churches were built for the Christian foreigners, while missions were established to convert the pagan Chinese to the more acceptable "Christian" ways. As a result, a number of missionary schools were built

as a charity cause in order to educate those children who came from poor families. Up until this time, education for the Chinese was considered a privilege only for the wealthy elites, not for the commoners. Although a few Chinese schools were in existence, in the main they were concerned only with the teaching of Chinese classics. A few government-sponsored schools were also built, for the teaching of English, and to provide a western-type of education.

The rationale for this government policy -- that is, to provide western education -- was that the British considered the Chinese language "injurious to the mind, robbing it of common sense" (Gleason, 1963). The value of learning the English language, for the Chinese, was purely economic. It was found that as soon as the school children had acquired a smattering of English, they would leave school (Endacott, 1973). The missionary schools, on the other hand, attempted to include English, Chinese, sciences, as well as biblical teachings into the curriculum. Thus the type of schools in existence were: Chinese school, western-type school taught in Chinese, western-type school taught in English, and western-type school taught in a combination of Chinese and English. These types of school were the forerunners of the beginning of an educational system in the Colony. The primary objective of the government was the teaching of the English language to the Chinese citizens -- to promote better understanding of the British ways. The emphasis on English over the vernacular (Chinese) remains a legacy to this day. One important point to note: although the Chinese population vastly exceeded the European population in number, government officials made little attempt to learn the language of the native population, or the language of the majority.

The period up to the turn of the century saw a firm establishment of Hong Kong as an entreport along international lines. This trade not only saw the shipment of material goods, but also the shipment of human cargo, to North America and Australia, and other parts of the world, as coolie labour. The political instability and oppressive feudal conditions in China brought a large number of immigrants to the Colony. The rise of population necessitated further development, particularly in the areas of construction and commerce. In 1898, Britain leased the New Territories for ninety-nine years from China, mainly for the purpose of offsetting the balance of foreign powers (France and Russia) in China. At the same time, this lease extended another 355 square miles to Hong Kong.

On the social level, Chinese and foreign communities continued to live apart. There were occasional riots against the British and against the privileged status of foreigners. The British, in order to enlist Chinese co-operation and allegiance to the British Colony, established a Legislative Council to deal with local affairs. However, it was much later before any Chinese individuals were elected as representatives to sit on the Council. In the main, living conditions for the Chinese had somewhat improved, in the domains of medical services, public works, and education. During this same period there were increasing demands by the influential classes for segregation: Europeans against the Chinese, rich against the poor, in respect to residence and education. Remnants of this attitude still exist to this day.

The War years and the political turmoil brought social and economic upheavals in Hong Kong. As usual in Hong Kong, when economically oppressed, the populace broke out in labour strikes and riots against the foreigners. Immigration also increased, and a different type of immigrant was noted

-- these were the wealthier Chinese from southern China. Although they came to the Colony for a safe haven, their loyalties remained in China. During the Japanese occupation of the Colony (1941-1945), a large number of Chinese residents returned to China. The direction of the two-way flow of population traffic between China and Hong Kong changed permanently after the Liberation of China. The 1950s saw a return of former residents and an influx of refugees from various regions of China into Hong Kong. This time the migration was permanent rather than temporary.

Contemporary Hong Kong -- from 1950s

The 1950s heralded the dawning of a new era in terms of significant changes in the character of Hong Kong. The population more than doubled, as a result of returnees, refugees, and new births. The new immigrants from China were very different from the old. Generally there were two classes of newcomers: the educated and wealthy elites from cosmopolitan regions and the poorer ones from the neighbouring provinces of China. The former brought with them their capital and expertise in commerce and trade. The latter brought with them their willingness to work. As a result of this new phase, all sectors of the Colony benefited. In trade the China embargo imposed by the United Nations and particularly the United States greatly affected the Colony's entrepôt trade. This stopped the flow of goods from China via Hong Kong to other parts of the world. This necessitated a development in local industries: in textiles, plastic goods, and small electronic parts. On the political front, the British government finally transferred more power to the locals in the new form of government -- a colonial self-government within the Commonwealth, with minimal governmental intervention in the affairs of the private sectors (industry and commerce). On the socio-cultural front,

there was an increased concern for people's welfare. To combat the increased population, housing developments sprouted overnight, dramatically changing the face of Hong Kong. A social welfare office was established to care for the needy, to control probation and correctional services, and to become involved in community development. Although labour conditions were much improved, yet they were still inadequate in solving the problem of surplus of manpower, or the problem of work conditions. It appeared to be the Government's intent to keep a large supply of cheap labour in order to supply industrial needs (Djao, 1979). On the educational front, the Baby Boom resulted in an unplanned increase of school-aged children. Schools had to serve more students (by implementing shifts of classes in the morning, afternoon, and evening). They also had to serve as a training ground for the supply of manpower to the industries, for the purpose of economic growth of the Colony. By this time, the Chinese classic type of education became obsolete, as it no longer served the new needs of the Colony.

The new image presented by Hong Kong is that of the merging of the East and West, of maintaining a traditional cultural way of life and at the same time adopting Western know-how in technology and industry. Superficially, Hong Kong presents itself as a cosmopolitan centre.

Demographic Profile

The most recent estimation of Hong Kong's population (Hong Kong Government, 1979) was 4,720,200, of which 98% are said to be of Chinese origin.

Of the total population, 59% are Hong Kong-born. The majority of the Hong Kongites and the immigrants came from the Guangdong Province of China. The Cantonese are the major Chinese group, followed closely by

the Sze Yap, and then other dialect groups. The two percent of foreigners belong to many nationalities, with the British being the dominant group.

Social Stratification in Hong Kong

As the majority of the Chinese population are oriented to a pre-Liberation (Chinese) era, coupled with the class system brought in by the expatriates, the concept of class in Hong Kong is deeply entrenched. In Hong Kong's history, class distinctions have always been an issue, particularly with regard to residential districts and the distribution of education (Endacott, 1973).

The industrialization of Hong Kong has brought much affluence to the Colony. Although the bulk of this wealth goes into the hands of the wealthy, some of this effect does trickle down to the working masses, in the form of inexpensive material goods. Hong Kong is very similar to the Western industrialized societies, in that membership in a certain class is viewed in terms of its consumption patterns.

In the distribution of income, Hsia and Chau (1978) found that there are variations between and within the various employment sectors. With regard to income inequality within sectors, agriculture ranks highest, followed by services (which includes government, professional, and services), then industry (manufacture) which ranks the lowest. A sector comparison reveals that finance and insurance sectors receive the highest mean income, three times over manufacture, and four times over agriculture. The Hong Kong government is partially responsible for this unequal distribution of income, by its policy of minimal intervention in the labour sector (Djao, 1979). The working class is, in the main, found in the labour-intensive manufacturing sectors, as semi-skilled or non-skilled labour, with a low level of education (less than primary schooling), while

the middle class is found in the professional, management, or commerce category. (See Table 4).

In the Colony, particularly among the working class, there is an overwhelming portion of multiple wage-earners within the same households. This is often due to the fact that the principal wage-earner's income is inadequate, and thus necessitates one or more members in the household joining the labour force in order to supplement the meagre family income. Even with the additional wage-earners and an increase in the household income, these factors still do not appear to have an appreciable effect on the measure of inequality (Hsia & Chau, 1978).

In Hong Kong, the correlation between income inequality and educational attainment could be attributed to the quality of education one has access to (Hsia & Chau, 1978). Education inadvertently becomes a factor which differentiates the classes. This domain will be discussed in a subsequent section.

In Hong Kong, there is the phenomenon of a "transition working class" in which the upper working class would aspire to middle class values, particularly with respect to material consumption and educational goals for their children. It is not unusual to see parents contributing a major portion of their meagre income, for the purpose of securing quality education for their children. The pressure these parents placed on their children to achieve well in school is tremendous. They are often being reminded by their parents of their sacrifice for them. For this group, the access to a "good" school is equated with subsequent economic success. In a way, unfortunately, this is true in the Hong Kong society. However, class consciousness is vague with this group, who often perceive the improved standard of living as an indication of rising social status (Djao, 1979).

TABLE 4 (CONTINUED)

Levels of Schooling												
Occupation	Sex	No Schooling	Primary			Lower Secondary	Upper Secondary		Matriculation	Some University	University Graduated	Total
Farmers, fisherfolk, Etc.	M	12,370	18,000		2,370	1,320		80		30	170	34,340
	F	12,590	3,120		300	110		--		--	10	16,130
	T	24,960	21,120		2,670	1,430		80		30	180	50,470
Production & related works, & labourers	M	37,760	268,260		101,640	62,360	3,800		1,390		4,380	479,590
	F	59,130	199,800		54,260	24,360	1,060		170		840	339,620
	T	96,890	468,060		155,900	86,720	4,860		1,560		5,220	819,210
Material handling & related equipment operators, dockers, freight handlers & transport operators	M	20,460	86,440		28,970	19,410	1,010		360		590	157,240
	F	12,060	15,100		4,970	2,260	120		20		60	34,590
	T	32,520	101,540		33,940	21,670	1,130		380		650	191,830
Unclassified & armed forces	M	3,460	12,280		3,610	5,240	850		320		580	26,340
	F	3,020	4,600		1,240	1,450	280		80		270	10,940
	T	6,480	16,880		4,850	6,690	1,130		400		850	37,280

*From Census and Statistics Department, Hong Kong By-Census 1976 Basic Tables. Hong Kong: Government Press, 1976.

Consequently few analyses are made regarding the basic social structure and its concomitant inequities by this group of people.

Education in Hong Kong

In the highly competitive and achievement-oriented Hong Kong society, education has become one of the chief means of social mobility, second perhaps only to a wealthy family background. It is also closely related to the distribution of income. The type of education a child has access to also has an impact on his/her intellectual orientation, and ultimately his/her occupational opportunities.

The education system in Hong Kong is differentiated by the language of instruction. In the Chinese stream, where Chinese is used as the medium of instruction for all curriculum subjects, English is taught as a second language. In the Anglo-Chinese stream, English is used as the principal medium of instruction for most subjects -- although a combination of Chinese and English is not uncommon. However, Chinese is taught as a curriculum subject. In the English stream, English is the sole medium of instruction, and Chinese or other languages are taught as second languages. The latter stream caters to the English-speaking children in the Colony; however, some private schools do use English only in instruction. In the main, the Anglo-Chinese schools are the most popular ones among the residents. The prevalence and preference of the Anglo-Chinese schools appears to be rooted historically in the inception of the education system. English has been the *lingua franca* of the Colony. Chinese was only officially recognized in 1974. Although Hong Kong has been granted a bilingual status since that time, English is still the dominant language in government, trade, and commerce. For practical reasons then, parents prefer to send their children to the Anglo-Chinese

schools, for obvious economic returns.

Although pre-school education is available in the Colony, in the main, these are run as private institutions, for the benefit of the financially able. Admission is based on an unstructured "merit" system (from parent interviews). That is to say, only children who could pass an "entrance examination," and whose parents could afford to pay the high tuition fees, are enrolled in play schools or kindergartens. Needless to say, working class parents could not hope to send their children to such institutions. Fortunately, since 1978, universal education (at least for the first nine years of schooling) has become possible for every child in the Colony. However, universal education does not by any means ensure that every child will receive equal educational opportunities, as we shall see.

Schools are differentiated by the type of financial assistance they receive, and are classified as: government-financed schools, government-aided schools, and private schools. Although all schools are government-inspected and come under the jurisdiction of the ministry of education, the quality of education differs markedly from school to school. In the main, government-run primary schools provide the bare basics, and nothing more. Government-aided and private primary schools, on the other hand, seem to be competing for academic "excellence." The prevalent trend is that, as long as the parents are able, they prefer to send their children to the latter types of school. Certain schools are prestigious as a result of their carefully cultivated reputation. Usually reputations are based on the school's commitment to quality education, as well as the students' success rate in public examinations. Admission to reputable schools is often based on academic merits. Enrollment in such schools

often does provide assurance of educational success as well as social success -- that is, admission to secondary, matriculation or even university status. The Hong Kong government is not yet able to provide full secondary schooling for every school-aged child, so enrollment in secondary school is necessarily based on a system of elimination -- those who do not perform according to a set standard will be eliminated. For the wealthy, this implies that their children would be sent to private schools. Thus a pyramid system in education is inevitably created (see Table 5). It is the school child who bears the brunt of such a pressure system, both within the home and from society at large. Psychologically and cognitively, this has profound implications for the child's attitude and development.

Another area of concern related to education is the teaching of the English language. English is the second or third language for the bulk of the Chinese population. Yet in all respects in the society, it assumes a prominent position, whereas Chinese is placed in a secondary or lower status position. Schaefer Fu (1976) has pointed to the social-psychological barriers impeding the learning of English efficiently by the Hong Kong Chinese student. These barriers are related to: the imposition of a foreign language on a native population; the social pressure of acquiring English for the purposes of achievement or success; the dilemma of loyalty to one's cultural group; and the search of a cultural identity amidst cultural dominance. For the modern, Western-educated, and successful Chinese, the learning process has been positive and fruitful. This they pass to their children. However, for the majority of the working class population, in which a large percentage are China-born, their cultural values are still very much tied to China. Their knowledge of affairs in

TABLE 5
PERSONS ATTENDING EDUCATIONAL INSTITUTION IN HONG KONG, 1976*

Levels of Schooling

Age	Sex	Kindergarten	Lower Primary	Upper Primary	Lower Secondary	Upper Secondary	Matriculation	Some University	University Graduated	Total
4 & below	M	37,680	730	-	-	-	-	-	-	38,410
	F	33,700	520	-	-	-	-	-	-	34,220
	T	71,380	1,250	-	-	-	-	-	-	72,630
5	M	31,230	4,330	-	-	-	-	-	-	35,560
	F	20,130	4,330	-	-	-	-	-	-	34,460
	T	61,360	8,660	-	-	-	-	-	-	70,020
6	M	17,950	19,860	-	-	-	-	-	-	37,810
	F	16,970	18,920	-	-	-	-	-	-	35,890
	T	34,920	38,780	-	-	-	-	-	-	73,700
7	M	2,770	37,880	-	-	-	-	-	-	40,650
	F	2,140	35,070	-	-	-	-	-	-	32,210
	T	4,910	72,950	-	-	-	-	-	-	77,860
8	M	680	40,810	260	-	-	-	-	-	41,750
	F	620	37,610	290	-	-	-	-	-	38,520
	T	1,300	78,420	550	-	-	-	-	-	80,270

TABLE 5 (CONTINUED)

Levels of Schooling

Age	Sex	Kindergarten	Lower Primary	Upper Primary	Lower Secondary	Upper Secondary	Matriculation	Some University	University Graduated	Total
9	M	200	39,270	4,110	-	-	-	-	-	43,580
	F	150	38,090	4,380	-	-	-	-	-	42,620
	T	350	77,360	8,490	-	-	-	-	-	86,200
10	M	-	33,570	15,220	140	-	-	-	-	48,930
	F	-	30,520	15,780	60	-	-	-	-	46,360
	T	-	64,090	31,000	200	-	-	-	-	95,290
11	M	-	17,370	32,630	1,440	-	-	-	-	51,440
	F	-	13,950	34,080	1,660	-	-	-	-	49,690
	T	-	31,320	66,710	3,100	-	-	-	-	101,130
12	M	-	6,860	34,210	8,990	-	-	-	-	50,060
	F	-	4,570	32,810	8,600	-	-	-	-	45,980
	T	-	11,430	67,020	17,590	-	-	-	-	96,040
13	M	-	3,060	21,540	28,170	60	-	-	-	52,830
	F	-	2,060	17,560	26,880	80	-	-	-	46,580
	T	-	5,120	39,100	55,050	140	-	-	-	99,410
14	M	-	1,210	7,460	35,550	820	-	-	-	45,040
	F	-	1,030	5,110	31,690	880	-	-	-	38,710
	T	-	2,240	12,570	67,240	1,700	-	-	-	83,750

TABLE 5 (CONTINUED)

Levels of Schooling

Age	Sex	Kindergarten	Lower Primary	Upper Primary	Lower Secondary	Upper Secondary	Matriculation	Some University	University Graduated	Total
15	M	-	340	2,970	32,770	3,750	10	-	-	39,840
	F	-	180	2,100	27,000	4,090	10	-	-	33,380
	T	-	520	5,070	59,770	7,840	20	-	-	73,220
16	M	-	-	960	21,360	10,230	120	-	-	32,670
	F	-	-	910	17,170	10,580	100	-	-	28,760
	T	-	-	1,870	38,530	20,810	220	-	-	61,430
17	M	-	-	360	9,730	13,980	640	50	-	24,760
	F	-	-	500	7,040	12,250	430	40	-	20,260
	T	-	-	860	16,770	26,230	1,070	90	-	45,020
18	M	-	-	30	3,410	9,580	2,360	250	-	15,630
	F	-	-	50	3,150	8,040	1,430	260	-	12,930
	T	-	-	80	6,560	17,620	3,790	510	-	28,560
19	M	-	-	30	1,060	4,170	2,660	1,020	-	8,940
	F	-	-	40	1,100	3,210	1,460	550	-	6,360
	T	-	-	70	2,160	7,380	4,120	1,570	-	15,300
20	M	-	-	-	270	1,510	1,420	1,610	-	4,810
	F	-	-	-	320	1,230	600	960	-	3,110
	T	-	-	-	590	2,740	2,020	2,570	-	7,920

TABLE 5 (CONTINUED)

Age	Sex	Levels of Schooling						Matriculation	Some University	University Graduated	Total
		Kindergarten	Lower Primary	Upper Primary	Lower Secondary	Upper Secondary					
21	M	-	-	-	160	420	690	1,820	100	3,190	
	F	-	-	-	210	510	280	890	140	2,030	
	T	-	-	-	370	930	970	2,710	240	5,220	
22	M	-	-	-	-	290	380	1,290	150	2,110	
	F	-	-	-	-	260	160	670	120	1,210	
	T	-	-	-	-	550	540	1,960	270	3,320	
23	M	-	-	-	-	190	130	930	190	1,440	
	F	-	-	-	-	160	90	380	40	670	
	T	-	-	-	-	350	220	1,310	230	2,110	
24	M	-	-	-	-	80	50	580	60	770	
	F	-	-	-	-	40	90	230	50	410	
	T	-	-	-	-	120	140	810	110	1,180	
25 & over	M	-	-	-	-	60	200	720	290	1,270	
	F	-	-	-	-	20	50	310	130	510	
	T	-	-	-	-	80	250	1,030	420	1,780	
Total	M	90,510	205,290	119,780	143,050	45,140	8,660	8,270	790	621,490	
	F	83,710	186,850	113,610	124,610	41,350	4,700	4,290	480	559,870	
	T	174,220	392,140	233,390	267,390	86,490	13,360	12,560	1,270	1,181,360	

*From Census and Statistics Department, Hong Kong By-Census 1976 Basic Tables. Hong Kong: Government Press, 1976.

the Colony or their ability in the English language is limited, if not nil. For their offsprings, the learning of English has become a struggle, with little help forthcoming from their parents. Although Hong Kong language teachers are continuously searching for effective methods or manipulative means in teaching English, by and large, their success has been limited. Classroom teaching of a foreign language, in the main, does not produce proficiency in that language (Jakobovits, 1971), if it is not supported by other social systems -- particularly the family system.

Family Life in Hong Kong

The acceleration of urbanization and industrialization has considerably changed the quality of life among the citizens of Hong Kong, and has widened the existing gap between the rich and the poor. This has important repercussions for basic needs such as shelter and secure family life.

With reference to shelter, there is an overwhelming 46% of the total population residing in government-subsidized housing (Hong Kong Government, 1979). In general, the housing situation is characterized by its dire lack of space -- which is far from adequate by Western standards. In the older government housing units, a precious twenty-four square feet is allotted to each person (adult, half that space for a child), although the newer units are considerably improved. In private housing units, space is at a premium. For the working class who do not have access to government housing, it is not unusual to see whole families (of six or more members) living within a space of about 100 square feet. There are persons who make living quarters out of bedspaces, hallways, rooftops, or even caves. It is a common practice for families to share a flat with

other co-tenants or families, sharing also kitchen and toilet facilities. Personal privacy under such living arrangements is severely restricted.

For the more affluent middle class, if the wage earners are professional employees of the government or big corporations, then they are fortunate enough to secure subsidized housing of spacious dimensions, suitable to their respective social status. In general, this group tends to live in self-contained, even self-owned dwellings. In Hong Kong, the residential district is often a good indicator of social class. It would be rare to see a middle class household living in a shared unit, say, in the district of Chai Wan, or conversely, a working class household in a self-contained unit in the Mid-Levels district on Hong Kong Island.

In terms of material consumption patterns, generally the overabundance of inexpensive goods and cheap labour has made acquisition of commodities possible even for the working class. In this context, the possession of middle class commodities (i.e., television, refrigerators, electrical appliances for household use) becomes invalid as an indicator of class membership. One would have to go beyond possession of certain material goods to the means of their acquisition. For the working class, multiple wage-earners within the same household is a fact of life. The added earnings are needed to supplement basic needs such as housing, food, and clothing. Any extra money could then be spent on labour-saving devices, or a television -- the chief means for entertainment. The middle class, on the other hand, are more fortunate by virtue of occupational and income status. Besides living in self-contained, spacious units, they are able to acquire other luxury goods, such as cars and equipment for the pursuit of hobbies. They are able to engage in leisure activities, and even take the occasional holiday trips abroad. In these families,

the amount of income brought in by the chief wage-earner is usually sufficient for the entire household expenditure. Hence, it is not uncommon to see the non-working mother in the capacity of a housewife, especially in families where there are young children.

Depending on the working patterns of the parent(s), family life differs accordingly, with respect to class values. Middle class parents are quite similar to their Western counterparts. That is to say, they are concerned with their children's general development, particularly intellectual development. In Hong Kong's excessively competitive atmosphere, the young child is instilled early in life with the need to excel, particularly academically. Materials pertaining to the stimulation of intellectual ability are acquired and taught to these children. Intellectual activities tend to be structured, often with little regard to the expressed needs (for play activities) of the child, but are seen as the necessary enrichment for the child. The affective domain differs considerably from the intellectual. Parents prefer to adopt a permissive attitude; that is, they cater to the child's material needs. Rewards are often given for scholastic achievement -- even schools adopt this practice. Besides intellectual activities, these children usually partake in "cultured" activities such as lessons in ballet, piano, or other musical instruments, or art. Play schools and kindergartens are carefully selected, and often parental influence is exerted on the school authorities to admit their children (this information is derived from the researcher's observation, as well as from parent interviews). Once these children reach school age, it is not unusual for parents to secure private tutors to upgrade their academic work. Essentially a great portion of time and money, as well as attention and encouragement is centred on the

children's academic pursuits. This is not to say that such families do not socialize together. Sometimes evenings and weekends are set aside for family activities. The middle class family, although very Westernized in most aspects of family life, still remains quite traditional in terms of parental role in childcare. Childcare is seen as the main responsibility of the mothers -- although fathers do spend time with their children, but their time is restricted by their social obligations related to their jobs.

On the other hand, the consistent struggle of the working class for survival in a labour competitive society, has severely restricted family life. Although these parents show some concern for their children's education, the harsh realities of the need for economic security means that young infants are often left in the care of extended family members (especially grandmothers). Adult-child interactions tend to be traditionally oriented rather than intellectually oriented. For example, values which are held high in regard are: respect for authority, obligation to the elders, obedience, honour, industriousness, and ability to help the family financially. In the home, intellectually-oriented materials such as children's books or games are a scarcity. For the school-aged children, it is not uncommon to see them working on their school work amidst noise and various kinds of distraction. It is a rarity to see adults helping their children in these regards. Or, in the off-school hours, these children might have to help to supplement the family income by engaging in cottage industries (such as assembling piece goods, plastic flowers, toys, etc.). The responses of many of these children, when asked what they would aspire to when they grow up, centres around "getting a job which pays well" in the manufacturing factories.

The prevalent choice of work is either in the textile industries, or in electronic industries where conditions are superior -- particularly for girls (Djao, 1979). Very few of these children would consider completing or going beyond secondary schooling. To achieve financial independence as well as to be able to help the family financially are their main concerns. This orientation reflects their social conditions. These concerns have considerable implications for their intellectual, that is, school activities.

In sum, this ethnography of Hong Kong suggests that the life style of the residents is governed by class status. Unlike Alberta, where there is the pervasive belief in middle classness, Hong Kong is very much class-oriented. The existence of class stratification is rooted both in its colonial history and the cultural traditions of old China. The quality of life of its citizens is accordingly differentiated. Although there is limited upward movement, social mobility is extensively determined by social background, quality of education, and distribution of income. At present, the Hong Kong government's main concern is in the development of the industrial and commercial sectors of the Colony. For such a reasonably affluent developing metropolitan centre, the vast majority of its citizens have little reprieve in their social conditions, vis à vis labour and education. It is in the latter that the impact of such a societal system is felt, in the well-being of the citizens, and particularly in the cognitive development of the children.

CHAPTER IX

RESEARCH RESULTS AND DISCUSSION

Introduction

In this chapter, each hypothesis will be re-stated. Then the statistical data will be presented, followed by a discussion of the hypothesis. Whenever relevant, the discussion will be placed in context with the ethnographic data.

Hypothesis 1

There is a correlational relationship between performance on the two cognitive style tests: the CEFT/GEFT and the SCST.

Results

A Pearson Product-Moment correlation formula was used to obtain the correlation coefficients between the perceptual and the conceptual tests. Due to the size of the sample, there are variables that are unaccounted for in the analysis; thus results have to be interpreted cautiously. The correlation coefficients of the EFT with the SCST's descriptive (SD), relational-contextual (SR), and categorical-inferential (SC) are: 0.158* ($P < .001$); -0.151* ($P < .001$); and 0.016 ($P > .05$); and SC with SD: -0.278* ($P < .001$); and SC with SR: -0.50* ($P < .001$).

Discussion

The results refer us to a question raised in an earlier chapter: Are both Witkin's and Sigel's respective concepts of cognitive style inclusive of both the perceptual and conceptual domains of behaviour? Although the correlation of the EFT is significantly related to the SD (positively) and the SC (negatively), the coefficients are not sufficiently high to make a general statement on the validity of these two tests as measures of "cognitive style" at this point. As well, the lack

of correlation of the EFT with the SC raises doubts concerning the claim of unity of the perceptual and conceptual stylistic behaviours. However, one might cautiously say that the EFT and the SCST (exclusive of SC) are correlated, and thus represent certain cognitive patterns of behaviours. Whether each respective style is inclusive of both the perceptual and conceptual domains requires further evidence.

Hypothesis 2

There is a correlational relationship between performance on the perceptual *cum* conceptual tests (EFT and SCST) and the performance on the concept formation test (VB).

Results

A Pearson Product-Moment correlation formula was used to obtain the correlation coefficients between the cognitive style tests and the concept formation test. As in Hypothesis 1, caution needs to be taken in the interpretation, due to the large sample, and variables that might not be accounted for. The correlation coefficients of the VB with the EFT, and SCST (SD,SR and SC) respectively are: 0.29* ($P < .001$); 0.114* ($P < .005$); -0.316* ($P < .001$); and 0.279* ($P < .001$).

Discussion

Based on the correlations, certain stylistic behaviours appear to be related to higher cognitive functions, in the form of concept formation. For instance, both the EFT, the SD and SC types of styles appear to provide a certain positive predictability, while the SR a negative predictability. In general terms, it implies that when performance is high in the EFT, SD, and especially the SC, then one can predict that the performance on the VB would be high. On the other hand, when performance is high in the SR, then the performance on the VB would be low. The

result presented by Hanfmann (1941) that the perceptually oriented performs faster than the conceptually oriented has not been verified, as not all the tests in this study were timed. However, our results suggest that both the perceptual and conceptual processes could be equally involved in the Vygotsky-type test. At the same time, the findings also indicate that certain styles of cognitive behaviour, particularly the EFT, SR, and SC could be related to higher mental processes, especially in concept formation.

Hypothesis 3

Sex differences have an influence on the measures of cognitive style and concept formation.

Results

A one way analysis of variance was used in order to determine if sex differences exist in cognitive behaviours. The results are presented in Table 6. The results indicate that: 1) EFT -- $F_{.53}$, ($P > .05$); 2) SD -- $F_{11.78*}$, ($P < .001$); 3) SR -- $F_{13.44*}$, ($P < .001$); and 5) VB -- $F_{.00}$, ($P > .05$).

Discussion

The findings pertaining first, to Witkin's EFT seem to support the trend indicated by the various studies reported earlier -- that boys are more field-independent than girls, although the findings are non-significant statistically. Second, in the SD, boys were found to score significantly higher than girls, thus supporting the study reported by Sigel, Jarman and Hanesian (1967). Third, in the SR, the data shows that girls produce more relational type of responses than boys, at a statistically significant level. Fourth, in the SC, there is a trend which shows that girls produce more SC responses than boys; however, the differences are non-

TABLE 6
MEAN DIFFERENCES BY SEX ON EFT, SCST AND VB

<u>Variable</u>	<u>Sex</u>	<u>N</u>	<u>Mean</u>	<u>S.D.</u>
<u>EFT</u>	M	305	13.472	5.99
	F	321	13.128	5.86
<u>SCST</u> <u>SD*</u>	M	305	455.744	176.52
	F	321	409.289	162.01
SR*	M	305	245.590	193.06
	F	321	301.934	191.42
SC	M	305	300.262	152.33
	F	321	292.828	149.55
<u>VB</u>	M	305	64.741	14.85
	F	321	64.704	14.95

*(DF: 1,624), $P < .001$.

significant. Fifth, in the VB, although there are no significant differences between boys and girls, the trend in concept formation appears to favour the boys. The findings in cognitive styles can now give more substantiation to the results in Hypothesis 2. When sex differences are considered, the trends indicate a stronger correlation between the EFT/SD (positively) and the EFT/SR (negatively). The trend also produces the following profile -- boys appear to be more "field-independent" and more "analytic" in both their perceptual and conceptual styles, whereas girls appear to be more "field-dependent" and more "relational" and "global" in their perceptual and conceptual styles. However these trends have not significantly affected their performance in the VB. No extensive sex differences in child-rearing were noted in the ethnographic studies. With the progressive acceptance of the changes in sexual mores, how much of these sex differences in cognitive patterns would remain is a topic to be explored in the future.

Hypothesis 4

Age differences have an influence on the measures of cognitive style and concept formation.

Results

A one way analysis of variance was used to investigate age differences, of varying levels (level 1 -- 6-7 years; level 2 -- 8-9 years; level 3 -- 10-11 years) in cognitive behaviours. The results are presented in Table 7. As EFT tests of two differing levels were used, the obtained scores are not conducive to an actual development analysis between the ones who used the CEFT and the GEFT. Results are interpreted accordingly. The following are the results: 1) EFT -- levels 1 and 2 -- $F_{33.686}^*$, ($P < .001$); levels 2 and 3 -- $F_{41.278}^*$, ($P < .001$); 2) SD -- levels 1 and 2

TABLE 7
MEAN DIFFERENCES BY AGE ON EFT, SCST AND VB

<u>Variable</u>	<u>Age</u>	<u>N</u>	<u>Mean</u>	<u>S.D.</u>
<u>EFT</u>	6-7 **	213	12.052	5.60
	8-9 **	196	16.531	5.58
	10-11	217	11.594	5.37
<u>SCST</u>				
SD	6-7 *	213	404.122	196.03
	8-9	196	458.459	173.64
	10-11	217	435.244	134.00
SR	6-7 *	213	356.253	202.96
	8-9	196	251.092	196.16
	10-11	217	215.346	152.54
SC	6-7 *	213	242.756	147.92
	8-9 *	196	290.872	146.46
	10-11	217	354.193	137.02
<u>VB</u>	6-7 *	213	54.361	11.32
	8-9 *	196	64.582	11.15
	10-11	217	75.018	13.83

*(DF: 2,623), $P < .05$

** (DF: 2,623), $P < .005$

FIGURE 1

MEAN DIFFERENCES BY AGE ON EFT AND VB



*A different version of the EFT, the adult version, was used for the 10-11 yr. olds.

FIGURE 2
MEAN DIFFERENCES BY AGE ON SCST



-- $F_{5.244}^*$, ($P < .005$); levels 2 and 3 -- $F_{.966}$, ($P > .05$); 3) SR -- levels 1 and 2 -- $F_{16.538}^*$, ($P < .001$); levels 2 and 3 -- $F_{1.928}$, ($P > .05$); 4) SC -- levels 1 and 2 -- $F_{5.717}^*$, ($P < .005$); levels 2 and 3 -- $F_{9.99}^*$, ($P < .001$); 5) VB -- levels 1 and 2 -- $F_{35.826}^*$, ($P < .001$); levels 2 and 3 -- $F_{37.695}^*$, ($P < .001$). See Figures 1 and 2.

Discussion

The results of the measures of cognitive style and concept formation point toward a definite developmental pattern. In the EFT, the pattern is from the more field-dependent at the younger age level to the more field-independent at the older age level. In SCST, in SD, the pattern is from the more global to the more discrete or analytic, with age. In SR, it is from the more relational to the less relational, developmentally. And in SC, it is from the less categorical to the more categorical, developmentally. For perceptual and conceptual styles, it appears that their general developmental patterns are in agreement with their respective theories (Witkin's and Sigel's). At the younger age, children are more oriented towards perceptual patterns of behaviour and low level conceptual patterns of behaviour; whereas at an older age, they increasingly become more category- and concept-oriented. This is particularly true in the way they perform higher cognitive tasks. This factor too can be attributed to the type of schooling/educational experience where elemental concepts progressively give way to higher conceptual thinking, in which more sophisticated strategies of generalization, abstraction, analysis and synthesis are demanded of school children. Age and its concomitant social and educational experiences then become important influential factors in children's cognitive development.

Hypothesis 5

Linguality differences will have an influence on the measures of cognitive style and concept formation.

Results

A one way analysis of variance, and the Newman-Keuls and Scheffé formulas were used to explore linguality differences (1 -- unilingual; 2 -- semilingual; 3 -- compound bilingual; and 4 -- fluent bilingual). This refers to the differences between unilingual and bilingual experiences, and the differences between the types of bilingual experience. The results are presented in Tables 8 and 9. In EFT, types 1 and 2 -- $F_{1.153}$, ($P > .05$); 1 and 3 -- $F_{13.643^*}$, ($P < .001$); 1 and 4 -- $F_{11.057^*}$, ($P < .001$); 2 and 3 -- $F_{12.587^*}$, ($P < .001$); 2 and 4 -- $F_{11.739^*}$, ($P < .001$); 3 and 4 -- $F_{.129}$, ($P > .05$). In SD, 1 and 2 -- $F_{1.215}$, ($P > .05$); 1 and 3 -- $F_{.13}$, ($P > .05$); 1 and 4 -- $F_{.41}$, ($P > .05$); 2 and 3 -- $F_{1.419}$, ($P > .05$); 2 and 4 -- $F_{1.751}$, ($P > .05$); 3 and 4 -- $F_{.095}$, ($P > .05$). In SR, 1 and 2 -- $F_{2.56}$, ($P > .05$); 1 and 3 -- $F_{2.28}$, ($P > .05$); 1 and 4 -- $F_{4.135^*}$, ($P < .005$); 2 and 3 -- $F_{5.855^*}$, ($P < .001$); 2 and 4 -- $F_{7.792^*}$, ($P < .001$); 3 and 4 -- $F_{.547}$, ($P > .05$). In SC, 1 and 2 -- $F_{.001}$, ($P > .05$); 1 and 3 -- $F_{2.176}$, ($P > .05$); 1 and 4 -- $F_{3.173^*}$, ($P < .05$); 2 and 3 -- $F_{1.17}$, ($P > .05$); 2 and 4 -- $F_{2.059}$, ($P > .05$); 3 and 4 -- $F_{.285}$, ($P > .05$). In VB, 1 and 2 -- $F_{2.421}$, ($P > .05$); 1 and 3 -- $F_{6.826^*}$, ($P < .001$); 1 and 4 -- $F_{17.071^*}$, ($P < .001$); 2 and 3 -- $F_{10.31^*}$, ($P < .001$); 2 and 4 -- $F_{19.544^*}$, ($P < .001$); 3 and 4 -- $F_{3.198^*}$, ($P < .05$). See Figures 3 and 4.

Discussion

In general, linguality differences are non-significant when the unilinguals are compared with the semilinguals or compound bilinguals, in stylistic behaviours. It is only when they are compared with the

TABLE 8

MEAN DIFFERENCES BY LINGUALITY ON EFT, SCST AND VB

<u>Variable</u>	<u>Linguality^a</u>	<u>N</u>	<u>Mean</u>	<u>S.D.</u>
<u>EFT</u>	UL	384	12.339	5.69
	SL	72	11.000	5.26
	CB	109	16.229	5.41
	FB	61	16.79	5.80
<u>SCST</u>				
SD	UL	384	432.156	159.27
	SL	72	390.420	189.18
	CB	109	443.752	177.32
	FB	61	458.311	199.00
SR	UL	384	284.98	182.75
	SL	72	352.611	241.31
	CB	109	231.661	181.05
	FB	61	192.721	182.47
SC	UL	384	283.164	146.16
	SL	72	282.083	176.66
	CB	109	324.615	139.84
	FB	61	346.721	152.07
<u>VB</u>	UL	384	62.732	13.80
	SL	72	57.875	13.95
	CB	109	69.623	13.31
	FB	61	76.573	16.66

Linguality^a -- UL -- Unilingual
 SL -- Semilingual
 CB -- Compound Bilingual
 FB -- Fluent Bilingual

TABLE 9

NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANSBY LINGUALITY ON EFT, SCST AND VBEFT

	FB	CB	UL	SL
	16.787	16.229	12.339	11.000
SL - 11.000	5.787*	5.229*	1.339	0.0
UL - 12.339	4.448*	3.891*	0.0	
CB - 16.229	0.558	0.0		
FB - 16.787	0.0			

*(DF: 3,622), P .001.

SCST - SD

	FB	CB	UL	SL
	458.311	443.752	432.156	390.417
SL - 390.417	67.895	53.336	41.740	0.0
UL - 432.156	26.155	11.596	0.0	
CB - 443.752	14.559	0.0		
FB - 458.311	0.0			

TABLE 9 (CONTINUED)

SCST - SR

	SL	UL	CB	FB
	352.611	284.977	231.661	192.721
FB - 192.721	159.890**	92.255**	38.939	0.0
CB - 231.661	120.951**	53.316	0.0	
UL - 284.977	67.635*	0.0		
SL - 352.611	0.0			

*(DF: 3,622), $P < .05$ ** (DF: 3,622), $P < .005$ SCST - SC

	FB	CB	UL	SL
	346.721	324.615	283.164	282.083
SL - 282.083	64.638*	42.531	1.081	0.0
UL - 283.164	63.557*	41.450	0.0	
CB - 324.615	22.107	0.0		
FB - 346.721	0.0			

*(DF: 3,622), $P < .05$ VB

	FB	CB	UL	SL
	76.574	69.624	62.732	57.875
SL - 57.875	18.699**	11.749**	4.857	0.0
UL - 62.732	13.842**	6.892**	0.0	
CB - 69.624	6.950*	0.0		
FB - 76.574	0.0			

** (DF: 3,622), $P < .001$ *(DF: 3,622), $P < .05$

FIGURE 3

MEAN DIFFERENCES BY LINGUALITY ON EFT AND VB

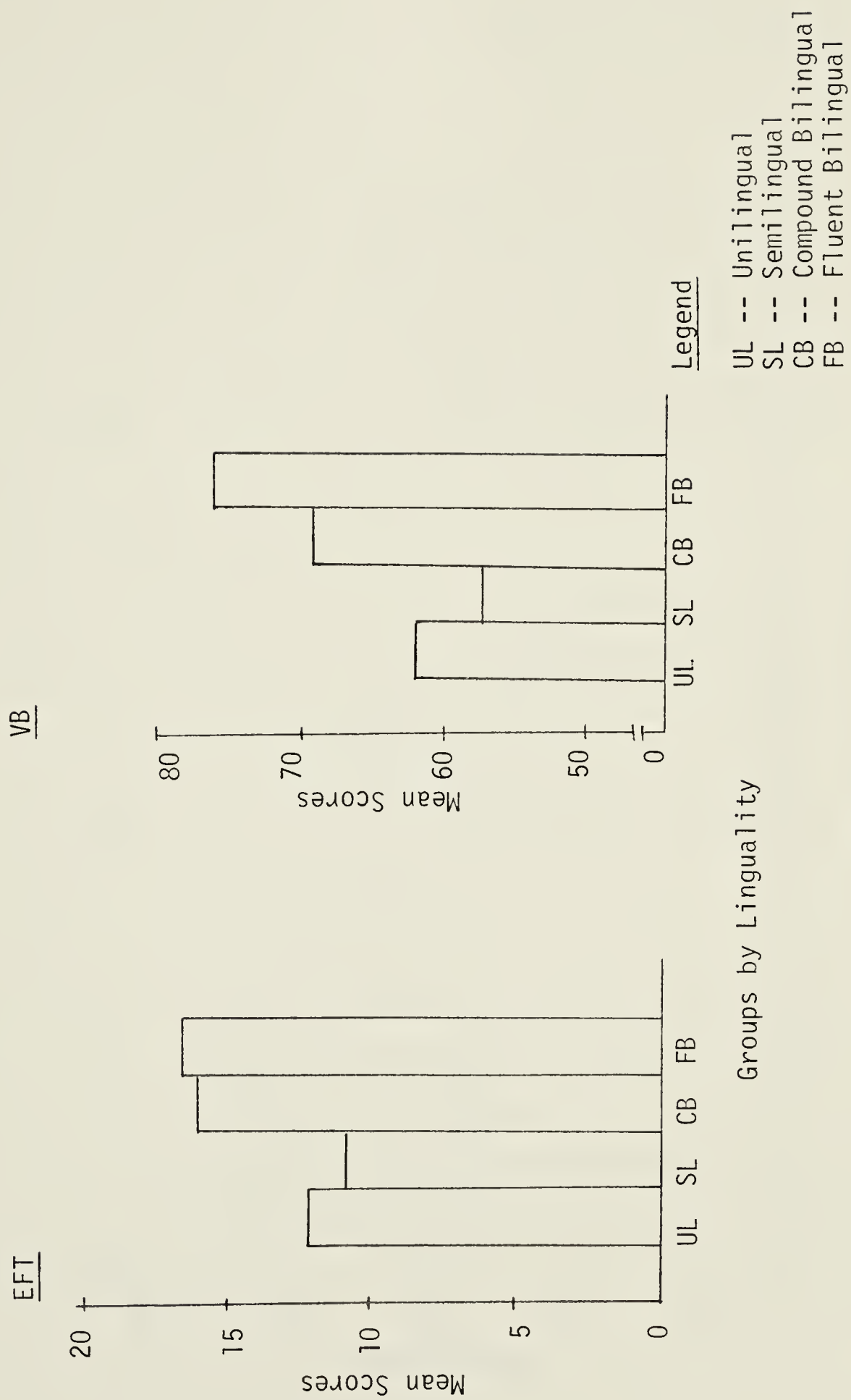
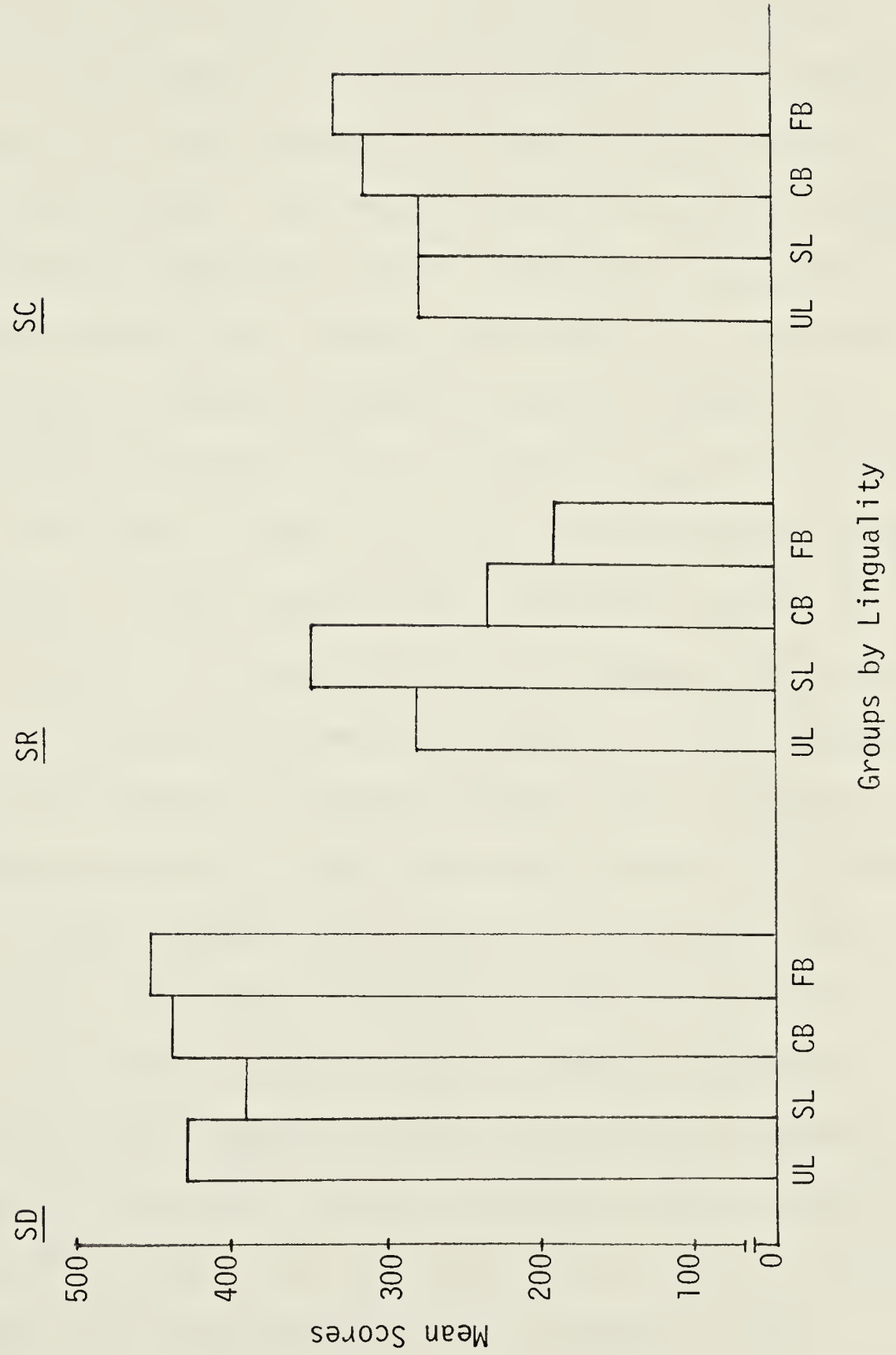


FIGURE 4
MEAN DIFFERENCES BY LINGUALITY ON SCST



fluent bilinguals that linguality differences become significant. However, a significant trend appears when examining language experience in relation to concept formation, favouring the fluent bilinguals, compound bilinguals, unilinguals, and followed by the semilinguals. A point of interest is that the semilinguals or compound bilinguals do not significantly differ from either their unilingual or fluent bilingual counterparts in stylistic performance. This result in stylistic patterns suggests a continuum of linguistic experience, that is, differences among these groups are more apparent than real. However, the profile of linguality level and its relation to concept formation (in Table 9) suggests that the quality of language acquisition could be related to cognitive performance. It appears that when children have access to two languages, whereby the status of both is seen as equal, and to which equal support is given, then this linguistic experience qualitatively changes their cognitive experience. For those children who have acquired a second language through schooling, the learning of a second language seems to improve their general language experience. This would support Bain's (1975) tenet that in learning a second language, the weaknesses in one becomes the strengths in the other, thus aiding in the whole language acquisition process. However, for those children who speak a minority language at home -- in our case the semilinguals, and where the dominant language is a second language, their particular language experience seems to somewhat affect their cognitive outcome. This finding has been reported by various other studies (Lemon, 1975; and Skutnabb-Kangas & Toukomaas, 1976).

In the test situation, it was noted that middle class children, in particular the fluent bilingual children, engaged in more verbalization and raised more queries. They applied more instances of superordinate

classes in SCST and were more able to manipulate the nonsense words in the VB in formulating ideas. Among this group of children, it was noted that they felt more at ease with the testing situation, and displayed a general feeling of enjoyment and challenge provided by these "games." Among the transition class children in Hong Kong, there was a pervasive sense of deep concentration on the task at hand, and they complied readily to the task demands, and seldom raised any questions. On the other hand, among the working class children, a passive acceptance of the task demands was apparent, verbalization was at a minimum, and little interest was displayed towards the solution of these "games." These various behaviours are noted both at home and in the classroom, and in their respective reactions to adults. It appears then, that middle class children are more able to apply their command of language to serve as a means in the process of concept formation. With respect to the working class children, their relative lack of experience in verbalization with adults both at home and in school, and their limited experience with the use of language in complex cognitive tasks, contributed to their poorer performance. This finding implies that more than just language experience or the level of linguality are involved in cognitive processes. Other social or cultural factors need to be investigated before any statements could be made with respect to differential patterns of cognitive development among children from different linguistic as well as varying level of linguality backgrounds.

Hypothesis 6

Cultural differences have an influence on the measures of cognitive style and concept formation.

Results

A one way analysis of variance, and the Newman-Keuls and Scheffé formulas were used to explore cultural differences between culture 1 (Hong Kong Chinese), culture 2 (bicultural Anglo-Chinese and Chinese-Canadians), and culture 3 (Anglo-Canadians). The results are presented in Tables 10 and 11. In EFT, cultures 1 and 2 -- $F_{2.013}$, ($P > .05$); 1 and 3 -- $F_{9.346^*}$, ($P < .001$); 2 and 3 -- $F_{22.643^*}$, ($P < .001$). In SD, 1 and 2 -- $F_{.16}$, ($P > .05$); 1 and 3 -- $F_{.462}$, ($P > .05$); 2 and 3 -- $F_{.10}$, ($P > .05$). In SR, 1 and 2 -- $F_{.977}$, ($P > .05$); 1 and 3 -- $F_{.001}$, ($P > .05$); 2 and 3 -- $F_{1.116}$, ($P > .05$). In SC, 1 and 2 -- $F_{3.78^*}$, ($P < .05$); 1 and 3 -- $F_{.293}$, ($P > .05$); 2 and 3 -- $F_{2.047}$, ($P > .05$). In VB, 1 and 2 -- $F_{5.779^*}$, ($P < .001$); 1 and 3 -- $F_{.041}$, ($P > .05$); 2 and 3 -- $F_{7.333^*}$, ($P < .001$). See Figures 5, 6.

Discussion

The findings indicate that cultural differences have some influence on cognitive behaviour, although the differences are not extensive throughout. For instance, pertaining to the perceptual domain of cognitive style, differences are found in between-group comparisons whenever a Western (Canadian) culture is involved. For the Hong Kong Chinese culture and the Chinese bicultures, a certain cultural mode of perception remains constant, even when a Chinese culture is transplanted from its ancestral location to a culturally different location (Alberta). This constancy could be explained by the similarity in socialization practices among the Chinese (both uni- and bicultural) and their particular emphasis on scholastic achievement over general development in children. This emphasis seems to have an implication in children's perceptual development. On the other hand, differences in the conceptual domain of cognitive style are non-significant. This latter finding, coupled with the finding

TABLE 10

MEAN DIFFERENCES BY CULTURE ON EFT, SCST AND VB

<u>Variable</u>	<u>Culture^a</u>	<u>N</u>	<u>Mean</u>	<u>S.D.</u>
<u>EFT</u>	1	180	13.683	5.54
	2	242	14.814	5.99
	3	204	11.152	5.56
<u>SCST</u>				
SD	1	180	441.078	157.80
	2	242	431.554	187.73
	3	204	424.284	160.53
SR	1	180	284.522	179.52
	2	242	257.831	210.23
	3	204	285.377	185.99
SC	1	180	276.922	140.93
	2	242	317.533	155.97
	3	204	288.671	150.76
<u>VB</u>	1	180	62.961	10.51
	2	242	67.880	16.00
	3	204	62.529	16.18

Culture^a -- 1 -- Chinese
 2 -- Chinese-British; Chinese-Canadian
 3 -- Canadian

TABLE 11

NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANSBY CULTURE ON EFT, SCST AND VBEFT

	2	1	3
	14.814	13.683	11.152
3 - 11.152	3.662*	2.531*	0.0
1 - 13.683	1.131	0.0	
2 - 14.814	0.0		

*(DF: 2,623), $P < .05$ SCST - SD

	1	2	3
	441.078	431.544	424.284
3 - 424.284	16.793	7.270	0.0
2 - 431.554	9.524	0.0	
1 - 441.078	0.0		

SCST - SR

	3	1	2
	285.377	284.522	257.831
2 - 257.831	27.547	26.692	0.0
1 - 284.522	0.855	0.0	
3 - 285.377	0.0		

TABLE 11 (CONTINUED)

SCST - SC

	2	3	1
	317.533	288.671	276.922
1 - 276.922	40.611*	11.749	0.0
3 - 288.671	28.862	0.0	
2 - 317.533	0.0		

*(DF: 2,623), $P < .05$

VB

	2	1	3
	67.880	62.961	62.529
3 - 62.529	5.351**	0.432	0.0
1 - 62.961	4.919*	0.0	
2 - 67.880	0.0		

*(DF: 2,623), $P < .05$

** (DF: 2,623), $P < .001$

FIGURE 5
MEAN DIFFERENCES BY CULTURE ON EFT AND VB

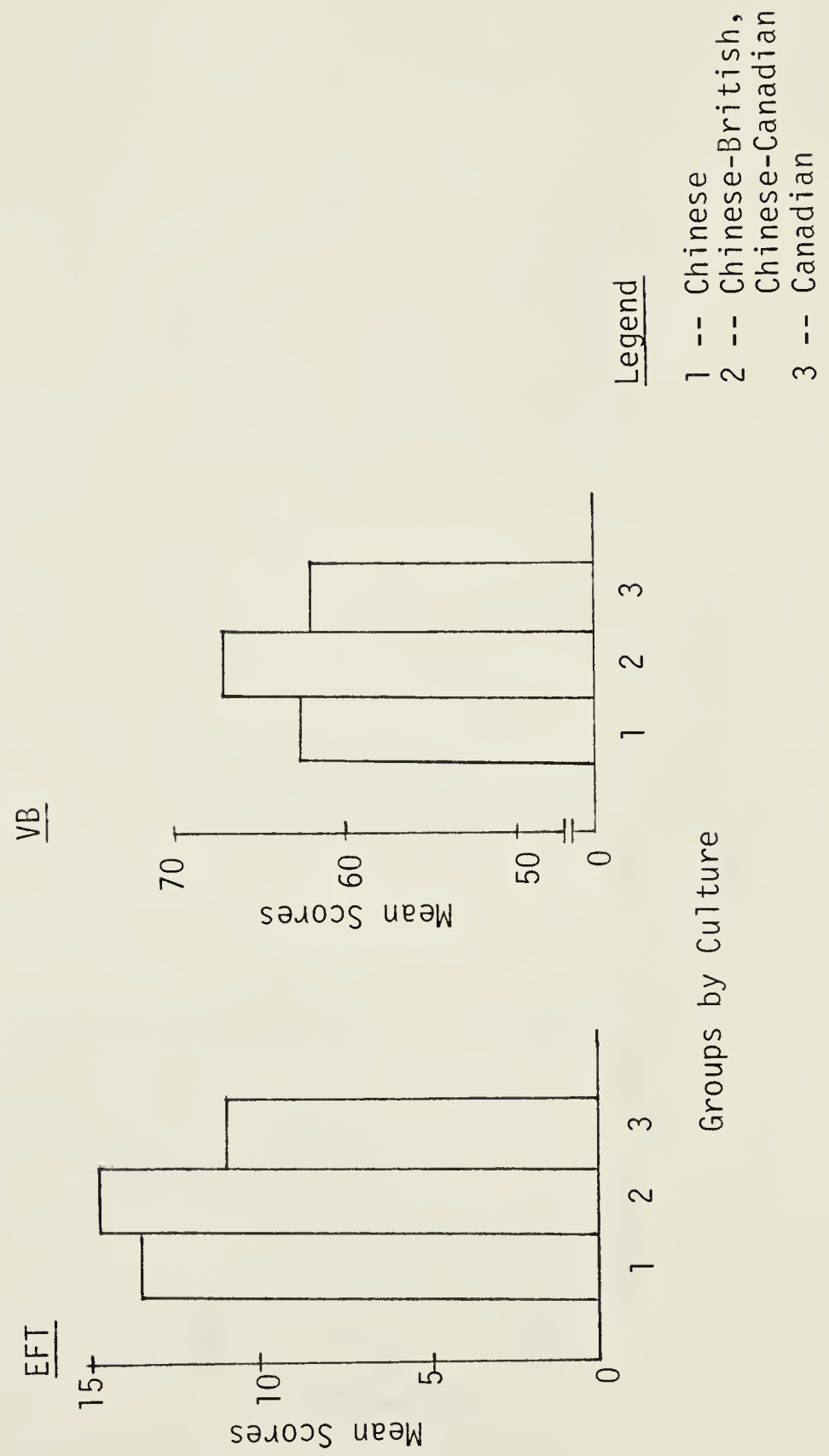
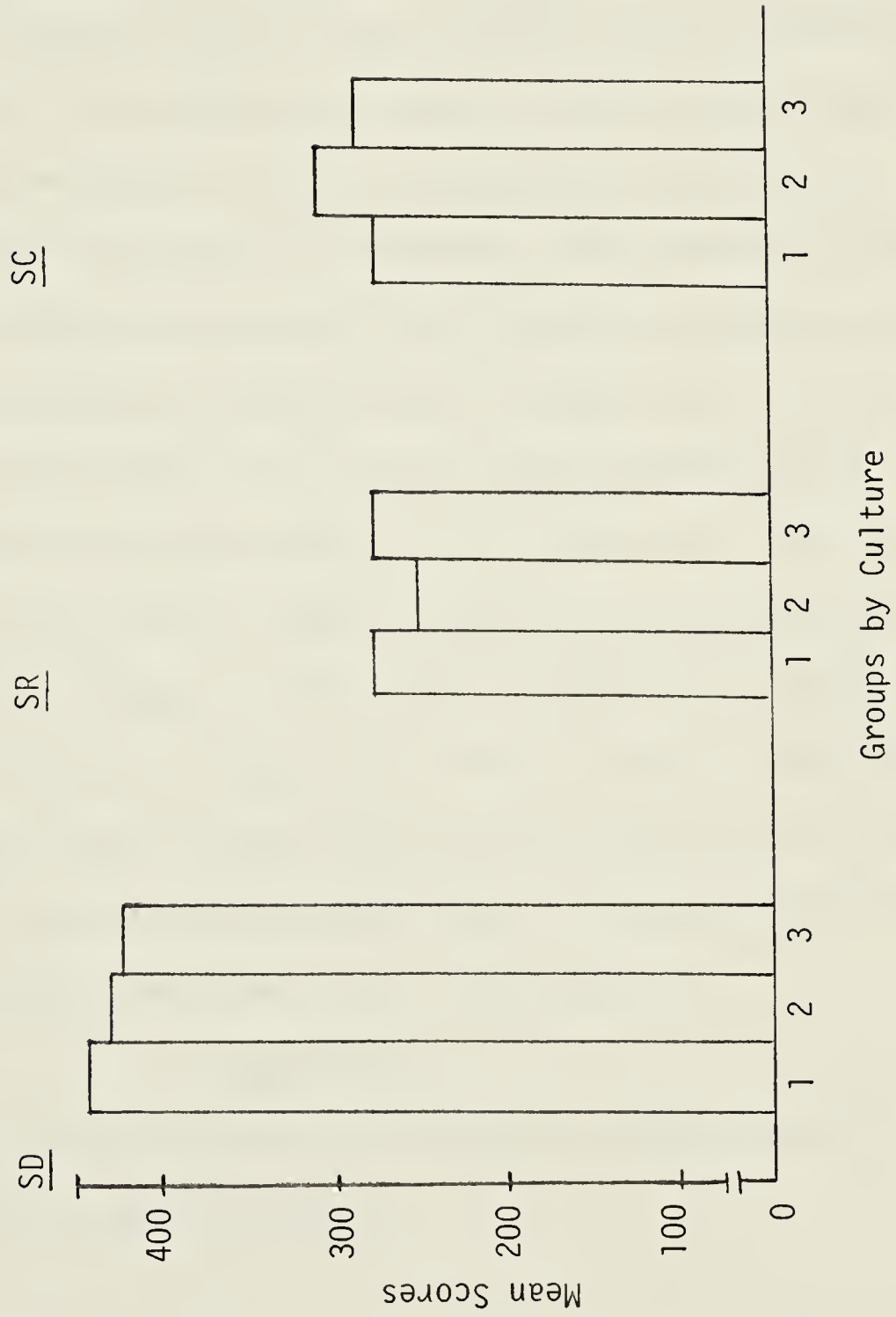


FIGURE 6
MEAN DIFFERENCES BY CULTURE ON SCST



on perceptual style, again raises the issue of the nature of cognitive style. If both the perceptual and conceptual purport to measure a similar type of cognitive behaviour, then one would expect that both types of behaviour would be affected by the same variables. However, the findings indicate otherwise. The point to the fact that there is little difference among Canadian and Hong Kong children in their conceptual stylistic behaviours, but differences exist in the perceptual behaviours. This suggests that perceptual style is considerably related to the cultural experience of the child. For example, most Chinese children learn early to do well in the types of task which are related to school achievement. This specific learning effect is again seen in the way they perform in the VB (see Table 11). In the concept formation test, it appears that better performance accrues to the child who is bicultural. Whether this bicultural child is able to benefit consistently from being immersed within two cultures, at this point, is difficult to determine. Again, as in the variable of linguality, how much one can impute from cultural effects on cognitive functioning necessitates caution in analysis. The analysis of class differences within such a bicultural dynamic is heuristic in producing a more meaningful interpretation.

Hypothesis 7

Social class differences have an influence on the measures of cognitive style and concept formation.

Results

A one way analysis of variance, and the Newman-Keuls and Scheffé formulas were used to determine social class differences between the middle class (1), the transition working class (2), and the working class (3). Results are presented in Tables 12 and 13. In EFT, classes 1 and 2

TABLE 12

MEAN DIFFERENCES BY SOCIAL CLASS ON EFT, SCST AND VB

<u>Variables</u>	<u>Social^a Class</u>	<u>N</u>	<u>Mean</u>	<u>S.D.</u>
<u>EFT</u>	1	198	15.727	5.72
	2	90	15.867	4.66
	3	338	11.186	5.53
<u>SCST</u>				
SD	1	198	432.217	182.57
	2	90	471.467	128.22
	3	338	421.222	172.26
SR	1	198	247.303	193.22
	2	90	262.033	146.80
	3	338	293.719	203.78
SC	1	198	319.960	143.95
	2	90	272.078	121.77
	3	338	289.169	160.09
<u>VB</u>	1	198	71.545	16.52
	2	90	66.067	9.53
	3	338	60.367	13.45

Social Class^a -- 1 -- middle class
 2 -- transitional working class
 3 -- working class

TABLE 13

NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANSBY SOCIAL CLASS ON EFT, SCST AND VBEFT

	2	1	3
	15.867	15.727	11.186
3 - 11.186	4.680*	4.541*	0.0
1 - 15.727	0.139	0.0	
2 - 15.867	0.0		

*(DF, 2,623), $P < .001$ SCST - SD

	2	1	3
	471.467	432.217	421.222
3 - 421.222	50.245*	10.995	0.0
1 - 432.217	39.250	0.0	
2 - 471.467	0.0		

*(DF: 2,623), $P < .05$ SCST - SR

	3	2	1
	293.719	262.033	247.303
1 - 247.303	46.416*	14.730	0.0
2 - 262.033	30.791	0.0	
3 - 293.719	0.0		

*(DF: 2,623), $P < .05$

TABLE 13 (CONTINUED)

SCST - SC

	1	3	2
	319.959	289.168	272.078
2 - 272.078	47.882*	17.091	0.0
3 - 289.168	30.791	0.0	
1 - 319.959	0.0		

*(DF: 2,623), $P < .05$ VB

	1	2	3
	71.545	66.067	60.367
3 - 60.367	11.179***	5.700*	0.0
2 - 66.067	5.479**		
1 - 71.545	0.0		

*** (DF: 2,623), $P < .001$ ** (DF: 2,623), $P < .01$ * (DF: 2,623), $P < .05$

FIGURE 7

MEAN DIFFERENCES BY SOCIAL CLASS ON EFT AND VB

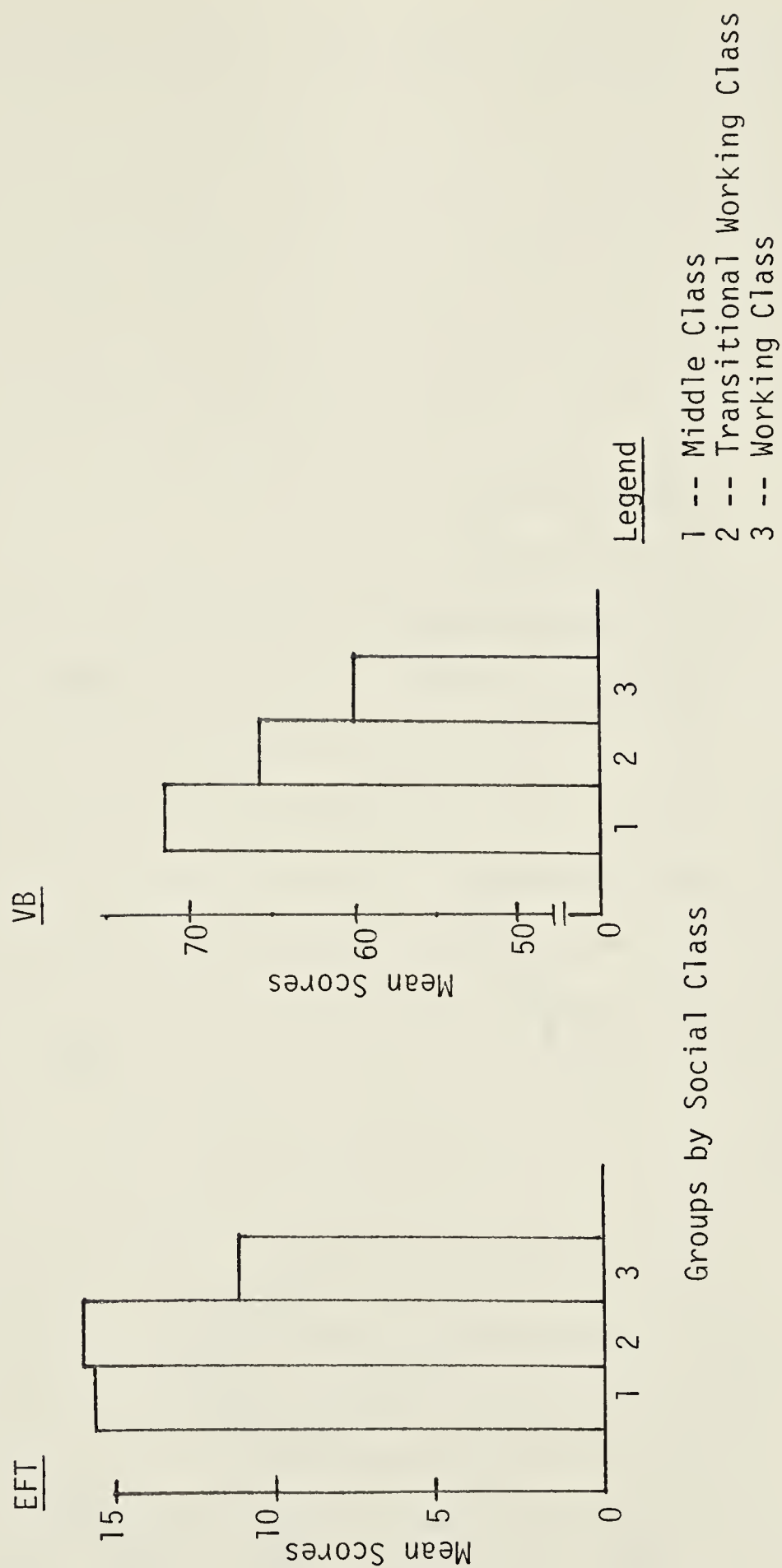
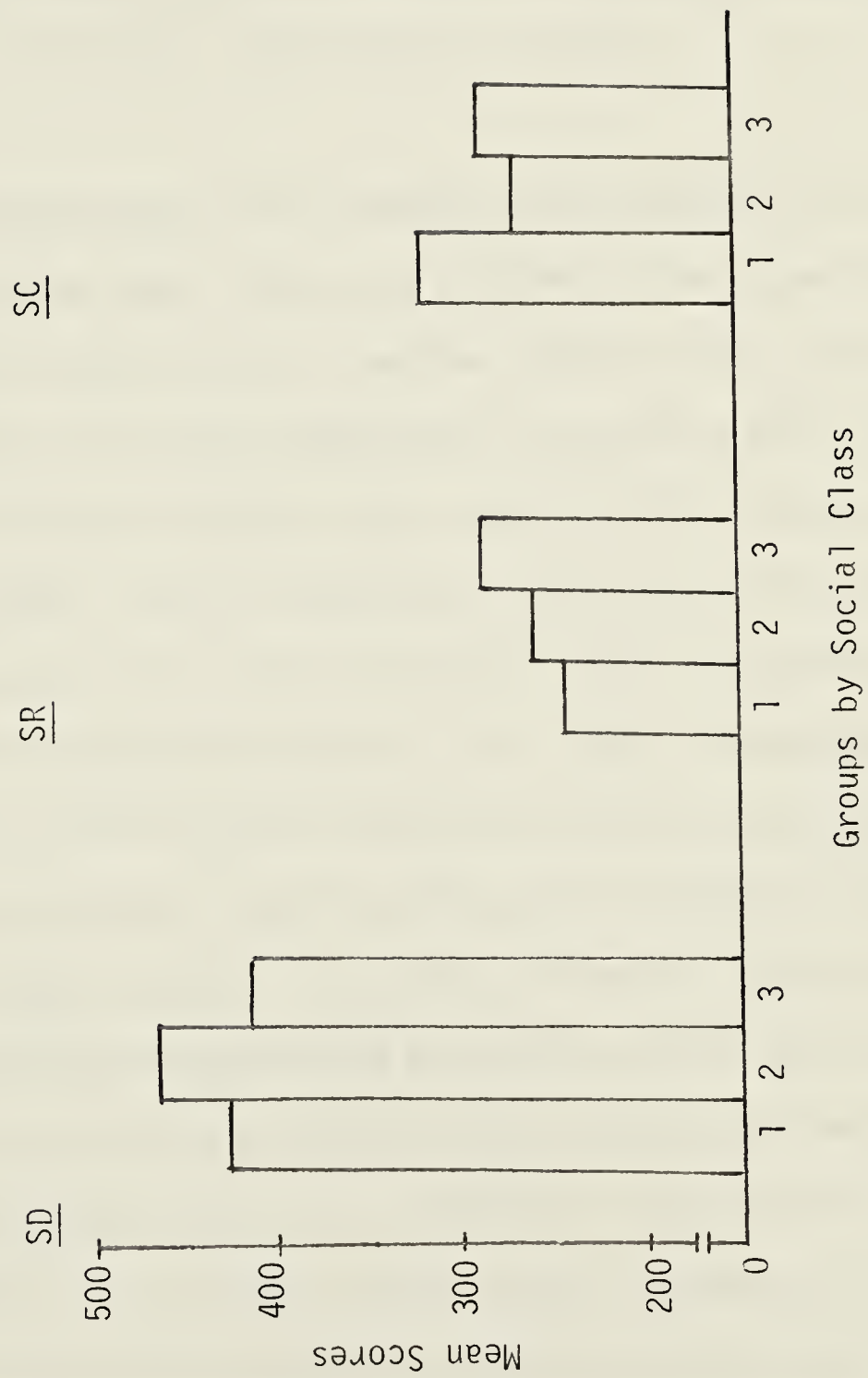


FIGURE 8
MEAN DIFFERENCES BY SOCIAL CLASS ON SCST



-- $F_{25.969}^*$, ($P < .001$); 1 and 3 -- $F_{42.943}^*$, ($P < .00.$); 2 and 3 -- $F_{.02}$, ($P > .05$). In SD, 1 and 2 -- $F_{3.1}^*$, ($P < .05$); 1 and 3 -- $F_{1.647}$, ($P > .05$); 2 and 3 -- $F_{1.647}$, ($P > .05$). In SR, 1 and 2 -- $F_{.955}$, ($P > .05$); 1 and 3 -- $F_{3.601}^*$, ($P < .05$); 2 and 3 -- $F_{.18}$, ($P > .05$). In SC, 1 and 2 -- $F_{.461}$, ($P > .05$); 1 and 3 -- $F_{2.627}$, ($P > .05$); 2 and 3 -- $F_{3.148}^*$, ($P < .05$). In VB, 1 and 2 -- $F_{5.858}^*$, ($P < .005$); 1 and 3 -- $F_{39.584}^*$, ($P < .001$); 2 and 3 -- $F_{4.712}^*$, ($P < .01$). See Figures 7 and 8.

Discussion

Results of the perceptual test indicate that working class children are more field-dependent than either the children of the transition working class or the middle class. When the scores of the conceptual test are considered, the results reveal that the working class children score more highly on the relational style, than on the descriptive and the categorical styles. On the other hand, transition working class children tend to score high on the descriptive style, followed by the categorical and the relational styles, in that order. Middle class children score in a similar manner to the transition working class children, although there is a significantly greater number of categorical responses in the former group. This pattern of results would indicate that certain stylistic behaviours hold predictive value. The trend is that when children perform in a field-dependent manner on a perceptual task, and in a relational manner in a conceptual task, then they would score low accordingly in a concept formation task. Conversely, when children perform in the field-independent manner on a perceptual task, and in a categorical manner on a conceptual task, then they would score high accordingly in a concept formation task. However, when this latter trend appears between two groups of children from different class back-

grounds, the better performance accrues to those children of middle class backgrounds. These trends in performance patterns indicate the effects of home and school/education environment. For middle class children, both these experiences are enriching -- which has a subsequent effect on their cognitive skills. In contrast, working class children's experience in these domains is relatively impoverished, accordingly, their cognitive skills reflect their everyday experience. This finding brings out the significant consequence of social class differences. They have serious ramifications for their cognitive development, and implications for social practices in the home, school and society. These various implications will be discussed in the concluding chapter.

Hypothesis 8

There are between group differences in performance in the measures of cognitive style and concept formation.

Results

Before one can proceed to the discussion of this hypothesis, a re-statement of the groupings is necessary. The groups were classified by geographical location, linguality, and culture. A Pearson Product-Moment correlation was applied to correlate the grouping with the independent variables of linguality, culture, and social class. The correlation coefficients reveal: 0.064 (linguality); 0.116 (culture); and 0.954 (social class). It appears then, that although groupings were classified by location, linguality, and class, they are more highly related to class status than any of the other variables. Based on this information, the following legend of the groups is constructed:

CMC - Canada, unilingual, Anglo-Canadian, middle class;

CWC - Canada, unilingual, Anglo-Canadian, working class;

CCW - Canada, bilingual, Chinese-Canadian, working class;

HMC - Hong Kong, bilingual, Anglo-Chinese, middle class;

HTC - Hong Kong, unilingual, Chinese, transition working class;

HWC - Hong Kong, unilingual, Chinese, working class.

A one way analysis of variance, and the Newman-Keuls and Scheffé formulas were used to delineate the patterns of cognitive performance by groups. The results are presented in Tables 14 and 15. In EFT, CMC and CWC -- $F_{6.446*}$, ($P < .001$); CMC and CCW -- $F_{4.886*}$, ($P < .001$); CMC and HMC -- $F_{28.452*}$, ($P < .001$); CMC and HTC -- $F_{15.843*}$, ($P < .001$); CMC and HWC -- $F_{1.839*}$, ($P < .05$); CWC and CCW -- $F_{.308}$, ($P > .05$); CWC and HMC -- $F_{6.724*}$, ($P < .001$); CWC and HTC -- $F_{1.973*}$, ($P < .05$); CWC and HWC -- $F_{1.238}$, ($P > .05$), CCW - HMC -- $F_{11.711*}$, ($P < .001$); CCW and HTC -- $F_{4.329*}$, ($P < .001$); CCW and HWC -- $F_{.439}$, ($P > .05$); HMC and HTC -- $F_{1.265}$, ($P > .05$); HMC and HWC -- $F_{13.808*}$, ($P < .001$); HTC and HWC -- $F_{6.235*}$, ($P < .001$). In SD, CMC and CWC -- $F_{.148}$, ($P > .05$); CMC and CCW -- $F_{.103}$, ($P > .05$); CMC and HMC -- $F_{.09}$, ($P > .05$); CMC and HTC -- $F_{.491}$, ($P > .05$); CMC and HWC -- $F_{.182}$, ($P > .05$); CWC and CCW -- $F_{.009}$, ($P > .05$); CWC and HMC -- $F_{.444}$, ($P > .05$); CWC and HTC -- $F_{1.078}$, ($P > .05$); CWC and HWC -- $F_{.002}$, ($P > .05$); CCW and HMC -- $F_{.398}$, ($P > .05$); CCW and HTC -- $F_{1.071}$, ($P > .05$); CCW and HWC -- $F_{.02}$, ($P > .05$); HMC and HTC -- $F_{.167}$, ($P > .05$); HMC and HWC -- $F_{.496}$, ($P > .05$); HTC and HWC -- $F_{1.49}$, ($P > .05$). In SR, CMC and CWC -- $F_{.486}$, ($P > .05$); CMC and CCW -- $F_{.563}$, ($P > .05$); CMC and HMC -- $F_{1.58}$, ($P > .05$); CMC and HTC -- $F_{.005}$, ($P > .05$); CMC and HWC -- $F_{.453}$, ($P > .05$); CWC and CCW -- $F_{.000}$, ($P > .05$); CWC and HMC -- $F_{4.237*}$, ($P < .005$); CWC and HTC -- $F_{.535}$, ($P > .05$); CWC and HWC -- $F_{.000}$, ($P > .05$); CCW and HMC -- $F_{4.237*}$, ($P < .001$); CCW and HTC -- $F_{.61}$, ($P > .05$); CCW and HWC -- $F_{.000}$, ($P > .05$); HMC and HTC -- $F_{1.256}$, ($P > .05$); HMC and HWC -- $F_{3.445*}$, ($P < .005$);

TABLE 14
MEAN DIFFERENCES BY GROUPS ON EFT, SCST AND VB

<u>Variables</u>	<u>Groups^a</u>	<u>N</u>	<u>Means</u>	<u>S.D.</u>
<u>EFT</u>	CMC	93	13.430	5.69
	CWC	111	9.243	4.69
	CCW	137	12.555	5.75
	HMC	105	17.762	4.94
	HTC	90	15.867	4.66
	HWC	90	11.500	5.51
<u>SCST</u>				
	SD			
	CMC	93	413.075	167.03
	CWC	111	433.676	155.01
	CCW	137	418.051	181.92
	HMC	105	449.171	194.53
SR	HTC	90	471.467	128.22
	HWC	90	410.689	178.25
	CMC	93	266.342	183.17
	CWC	111	308.097	187.78
	CCW	137	307.168	217.28
	HMC	105	193.457	182.47
SC	HTC	90	262.033	146.80
	HWC	90	307.011	205.54
	CMC	93	297.595	163.39
	CWC	111	278.022	134.25
	CCW	137	287.204	159.44
	HMC	105	357.105	142.63
<u>VB</u>	HTC	90	272.078	121.77
	HWC	90	281.767	158.33
	CMC	93	67.387	18.45
	CWC	111	58.460	12.72
	CCW	137	62.248	15.41
	HMC	105	75.229	13.66
	HTC	90	66.067	9.53
	HWC	90	59.856	10.57

Groups^a -- CMC -- Canada, unilingual, Anglo-Canadian, middle class
 CWC -- Canada, unilingual, Anglo-Canadian, working class
 CCW -- Canada, bilingual, Chinese-Canadian, working class
 HMC -- Hong Kong, bilingual, Anglo-Chinese, middle class
 HTC -- Hong Kong, unilingual, Chinese, transition working class
 HWC -- Hong Kong, unilingual, Chinese, working class

TABLE 15

NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANSBY GROUPS ON EFT, SCST AND VB

<u>EFT</u>	HMC	HTC	CMC	CCW	HWC	CWC
	17.762	15.867	13.430	12.555	11.500	9.243
CWC - 9.243	8.519*	6.623	4.187*	3.312	2.257	0.0
HWC - 11.500	6.262*	4.367**	1.930	1.055	0.0	
CCW - 12.555	5.207*	3.312*	0.875	0.0		
CMC - 13.430	4.332*	2.437	0.0			
HTC - 15.867	1.895	0.0				
HMC - 17.762	0.0					

*(DF: 5,620), $P < .05$ **(DF: 5,620), $P < .001$

TABLE 15 (CONTINUED)

<u>SCST - SD</u>	HTC	HMC	CWC	CCW	CMC	HWC
	471.467	449.171	433.676	418.051	413.075	410.689
HWC - 410.689	60.778	38.483	22.987	7.362	3.386	0.0
CMC - 413.075	58.391	36.096	20.600	4.976	0.0	
CCW - 418.051	53.416	31.120	15.625	0.0		
CWC - 433.676	37.791	15.496	0.0			
HMC - 449.171	22.295	0.0				
HTC - 471.467	0.0					

TABLE 15 (CONTINUED)

SCST - SR

	CWC	CCW	HWC	CMC	HTC	HMC
	308.097	307.168	307.011	266.342	262.033	193.457
HMC - 193.457	114.640*	113.711**	113.554*	72.885	68.576	0.0
HTC - 262.033	46.063	45.135	44.978	4.309	0.0	
CMC - 266.342	41.754	40.825	40.669	0.0		
HWC - 307.011	1.086	0.157	0.0			
CCW - 307.168	0.929	0.0				
CWC - 308.097	0.0					

**(DF: 5,260), $P < .005$ *(DF: 5,260), $P < .001$

TABLE 15 (CONTINUED)

SCST - SC

	HMC	CMC	CCW	HWC	CWC	HTC
	357.105	297.594	287.204	281.767	278.021	193.078
HTC - 193.078	85.027*	25.517	15.127	9.689	5.944	0.0
CWC - 278.021	79.083*	19.573	9.183	3.745	0.0	
HWC - 281.767	75.338*	15.828	5.438	0.0		
CCW - 287.204	69.900*	10.390	0.0			
CMC - 297.594	59.510	0.0				
HMC - 357.105	0.0					

*(DF: 5,620), $P < .05$

TABLE 15 (CONTINUED)

<u>VB</u>	HMC	CMC	HTC	CCW	HWC	CWC
	75.229	67.387	66.067	62.248	59.856	58.459
CWC - 58.459	16.769**	8.928**	7.607*	3.789	1.396	0.0
HWC - 59.856	15.373*	7.532*	6.211	2.393	0.0	
CCW - 62.248	12.980**	5.139	3.818	0.0		
HTC - 66.067	9.162**	1.320	0.0			
CMC - 67.387	7.841**	0.0				
HMC - 75.229	0.0					

 ** (DF: 5,620), $P < .01$

 * (DF: 5,620), $P < .05$

FIGURE 9
MEAN DIFFERENCES BY GROUPS ON EFT AND VB

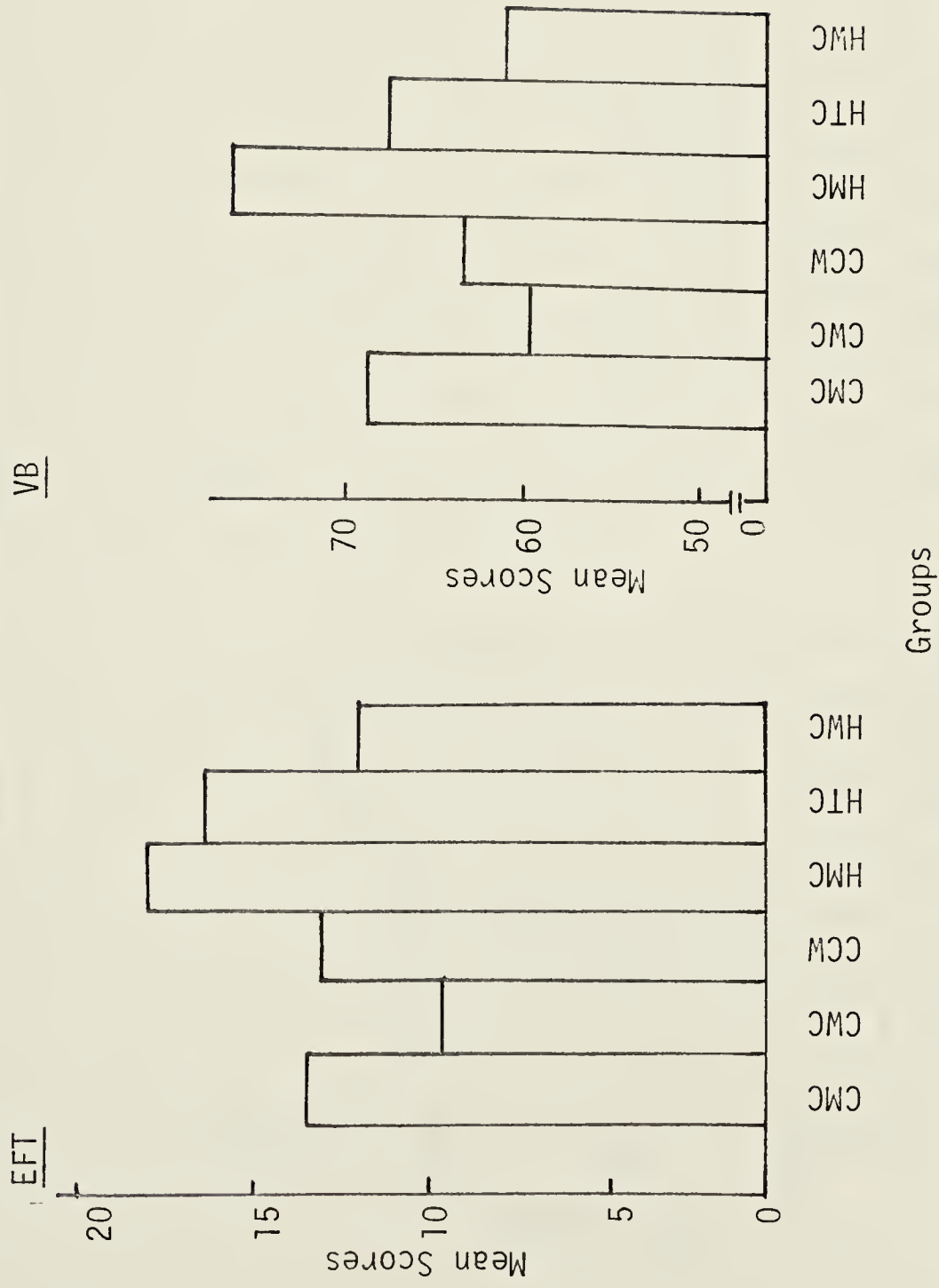
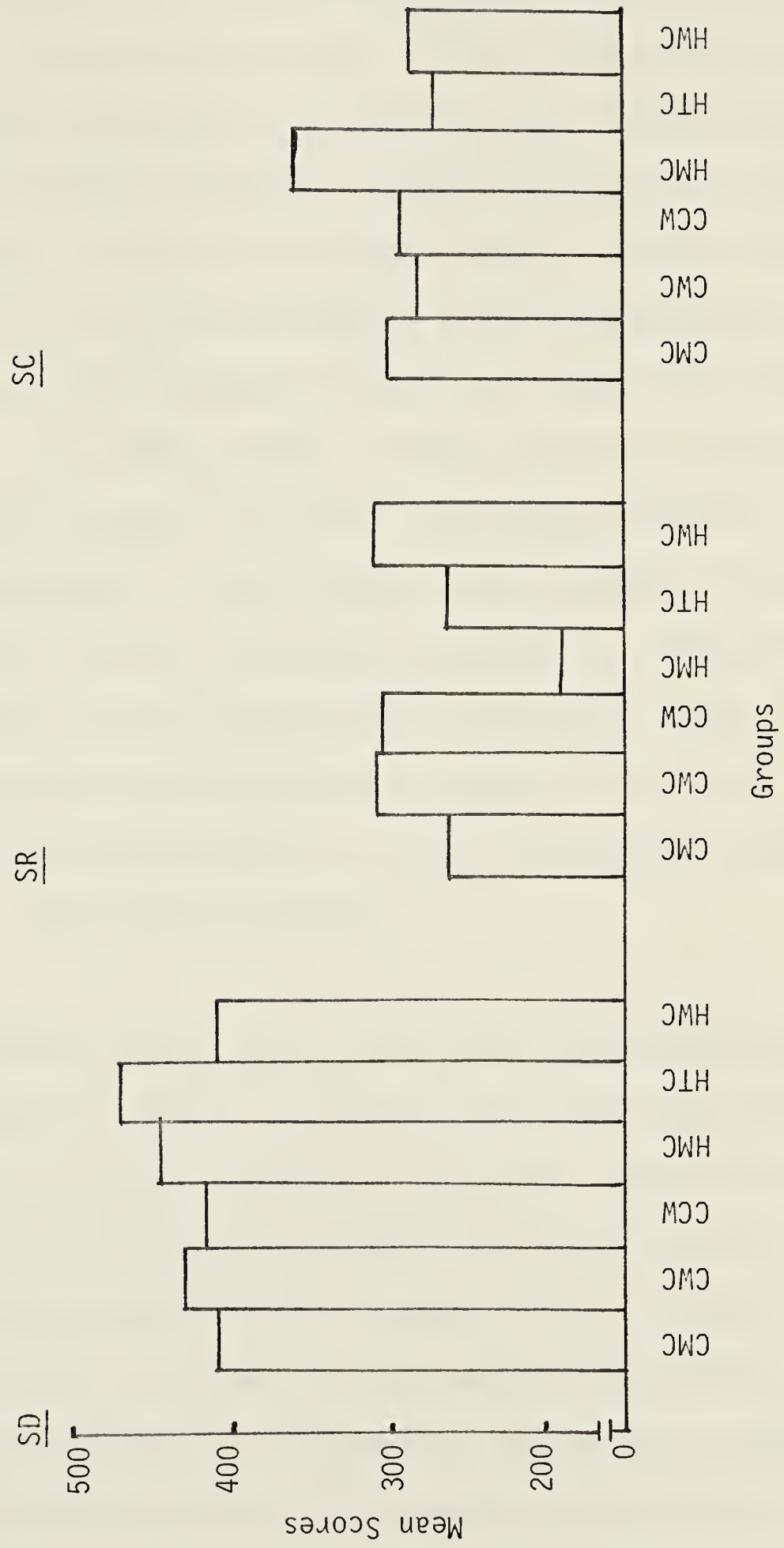


FIGURE 10
MEAN DIFFERENCES BY GROUPS ON SCST



HTC and HWC -- $F.502$, ($P > .05$). In SC, CMC and CWC -- $F.175$, ($P > .05$); CMC and CCW -- $F.06$, ($P > .05$); CMC and HMC -- $F1.727$, ($P > .05$); CMC and HTC -- $F.293$, ($P > .05$); CMC and HWC -- $F.113$, ($P > .05$); CWC and CCW -- $F.042$, ($P > .05$); CWC and HMC -- $F2.788^*$, ($P < .01$); CWC and HTC -- $F.015$, ($P > .05$); CWC and HWC -- $F.006$, ($P > .05$); CCW and HMC -- $F2.626^*$, ($P < .05$); CCW and HTC -- $F.112$, ($P > .05$); CCW and HWC -- $F.015$, ($P > .05$); HMC and HTC -- $F3.167^*$, ($P < .01$); HMC and HWC -- $F2.487^*$, ($P < .05$); HTC and HWC -- $F.038$, ($P > .05$). In VB, CMC and CWC -- $F4.208^*$, ($P < .001$); CMC and CCW -- $F.918$, ($P > .05$); CMC and HMC -- $F15.832^*$, ($P < .001$); CMC and HTC -- $F.001$, ($P > .05$); CMC and HWC -- $F.101$, ($P > .05$); CWC and CCW -- $F1.536$, ($P > .05$); CWC and HMC -- $F3.164^*$, ($P < .01$); CWC and HTC -- $F.083$, ($P > .05$); CWC and HWC -- $F2.707^*$, ($P < .01$); CCW and HMC -- $F10.451^*$, ($P < .001$); CCW and HTC -- $F.826$, ($P > .05$); CCW and HWC -- $F.324$, ($P > .05$); HMC and HTC -- $F4.245^*$, ($P < .001$); HMC and HWC -- $F11.95^*$, ($P < .001$); HTC and HWC -- $F1.811$, ($P > .05$). See Figures 9 and 10.

Discussion

The results indicate that in the EFT, the middle class children regardless of linguality or culture, tend to be more field-independent than the working class children. However, in the SCST, there is no significant differences in SD; some significant differences in SR -- between the HMC and the HWC, HMC and CCW, and HMC and CWC; and some significant differences in SC -- HMC and HTC, HMC and HWC, HMC and CCW, and HMC and CWC. These differences in the SR and the SC are class related, that is, middle class children tend to score lower in the relational, and higher in the categorical styles, and the converse is true for the working class children. These findings of both the perceptual and the conceptual styles reinforce the findings of the previous hypotheses -- that middle

class children tend to be more field-independent and analytic- and category-oriented in their stylistic performance. In concept formation, the patterns of cognitive performance show this descending order from the HMC, CMC, HTC, CCW, HWC to CWC. It would appear that with respect to these groups, their material backgrounds -- i.e., quality of lifestyle; family relationships; parental aspirations; type of education/schooling; type of books and toys; and type of extracurricular activities -- have the effect of enhancing or impairing their basic cognitive skills. When these findings of the stylistic behaviours are coupled with the findings of the concept formation behaviours, it appears that those who most benefit are the children of middle class backgrounds. The type of basic cognitive skills acquired by these children in particular, appears to be closely to the skills required to form more complex concepts, however, these are in no way similar.

SOME CONCLUSIONS

In this chapter, several issues have been investigated. First, the issue of the correlational relation between the perceptual and conceptual styles of cognitive performance. The evidence points to a relative correlation between the two cognitive measures (EFT and SCST) -- exclusive of the categorical style which is not correlated with the EFT. Although the correlations between the two measures are not substantial, they are consistent when variables such as sex, age, and social class are considered. The non-correlation of the EFT with the SC raises the question as to what constitutes the SC style in the SCST. Although the EFT has significant correlations with the SD and SR domains, their relation with the conceptual domain is dubious. This brings us back to an earlier question: Are the respective cognitive styles researcher *cum* context

specific? They do appear to be so, in that Witkin's construct pertains more to the perceptual, and that Sigel's construct pertains more to the conceptual, both in theory and research. However, the correlation between the EFT with the SD and SR implies that at lower cognitive levels, where abstract concepts are not required, both the perceptual and conceptual processes could be united. On the other hand, at higher cognitive levels where abstract thinking is the rule, these two processes might not be united. These two processes are united in the sense that they both comprise cognitive processes of different levels. This appears to support the thesis made by Werner (1957): at each domain of cognitive development (be it sensori-motor, perceptual, or conceptual), the level of functioning reflects the relative level of maturity of the individual. This is to say, stylistic behaviours represent a certain elemental level of cognitive functioning, essential for everyday cognitive operations. However, qualitatively different processes must be acquired (as in analysis and synthesis) for more complex cognitive operations, such as concept formation.

Another issue which was investigated was the correlation of the cognitive style measures (EFT and SCST) with the concept formation measure (VB). The findings seem to favour a relationship of the stylistic behaviours with higher cognitive functions, although this correlation is not high. This correlation needs to be qualified further. That is, stylistic behaviours are only adequate in providing basic cognitive skills which do not necessarily translate to abstract thinking. However, when the processes of concept formation is required, then different cognitive skills (i.e., abstraction, generalization, differentiation, analysis and synthesis) and other variables are involved in the process of higher

cognitive functions. At this level of complex activities, the ability to manipulate symbols and abstract representations of the environment is necessary to propel the individual to the formulation of abstract ideas. When the findings are juxtaposed with other variables (particularly age and social class), then the relationship between stylistic and higher cognitive behaviours becomes more evident. This further adds to the idea that stylistic behaviours form only the basic units of higher cognitive processes, but by themselves they are insufficient in formulating abstract concepts. Certain elements seem to be necessary in the process of concept formation, which involve the qualitative and quantitative experiences of the child in the milieux of home, school, and community.

Variables of sex, age, linguality, culture, and social class were also investigated to determine their relationships in the development of cognitive style and higher cognitive processes (in concept formation). For the greater part of the various cognitive measures, particularly pertaining to sex, linguality, and culture, the findings are trends only, and are not significant throughout. This implies that differences in these domains are more apparent than real. For example, the sex differences reported in this study generally support findings of earlier studies relating to Witkin's and Sigel's constructs. No sex differences can be discerned in higher cognitive processes. Pertaining to linguality -- or the type of language experience -- language effect becomes significant only when unilinguals are compared with fluent bilinguals, in stylistic behaviours. In general, the trend in the outcome of higher cognitive processes infers a relationship with the type of language experience. By and large, the more enriched the language experience, the better the

cognitive performance in conceptual tasks. This implies that language is used as a tool to construct reality, and at the same time it reflects the individual's existential experience. This finding supports Vygotsky's thesis that language is a social means of cognition. With respect to culture: effects are revealed only when the Chinese (both uni- or bi-) culture(s) is compared with a Western (Canadian) culture. In the main, there is tentative support for the tenet that a bilingual (fluent) and bicultural child could benefit from such a qualitatively different experience, when this experience is consciously induced -- that is, supported by the family, school, and societal practices. Pertaining to the variables of age and social class: there are significant differences in the various cognitive measures. The age differences are as postulated by Witkin, Sigel and Vygotsky, namely, that cognitive development progresses from the relatively global, immature level in which cognition is perceptually oriented, to the relatively analytic, mature level in which cognition is conceptually oriented. This statement is not to be understood simplistically. Based on the findings of this study, a qualification can be made. Specifically, both the perceptual and the elementary conceptual (referring to the descriptive and relational styles) processes are tenuously united. However, when higher cognitive processes as in concept formation is required, then various complex cognition skills are indispensable in this process. The sophistication of these skills are related to social experiences. Pertaining to the variable of social class: the findings indicate a pattern of cognitive performance in a descending order from middle class, transition working class, to working class. This pattern appears to be a result of their respective material backgrounds and upbringing. Thus, we propose that cognitive stylistic behaviours

constitute the very basic cognitive skills, which are necessary for the further development of higher mental processes. At the same time, the particular type of stylistic behaviours could influence to a certain extent how the child will eventually form abstract concepts. Moreover, the ultimate development in the conceptual domain is very much a consequence of qualitative (language, culture, and social class related) experiences.

Finally, we propose a profile of cognitive performance pertaining to the higher cognitive processes, in the descending hierarchy from Hong Kong middle class Anglo-Chinese bilinguals, to Canadian middle class Anglo-Canadian unilinguals, to Hong Kong transition working class Chinese unilinguals, to Canadian working class Chinese-Canadian bilinguals, to Hong Kong working class Chinese unilinguals, to Canadian working class Anglo-Canadian unilinguals. Each of these groups, in their own way, represents a particular social, linguistic, and cultural experience. In general terms, it implies that there is relative acceleration in cognitive development among middle class children (particularly when they are fluently bilingual and bicultural), in comparison to children of lower class backgrounds. For the children of the lower classes, better performance seems to accrue to those who come from a relatively supportive environment. For example, the transition working class children whose parents aspire to middle class values, and who set specific education goals for their children, seem to provide such an environment. This study suggests that the specific quality of education, the material bases of the home, and the parental aspirations in regards to their children, can significantly effect the outcomes in the development of cognitive skills. These various factors that are inclusive in the variable of social class, plus other

variables such as sex, age, language, and culture, to greater and lesser extents, intervene in the process of cognitive development of children. Where the results are significant, a strong relationship between that variable (i.e., social class) and cognitive development is indicated. Where the results are non-significant or partly significant, as in the variables of age, sex, language, and culture, developmental trends are indicated, which tend to support the general findings of this study.

This pattern of findings points towards the kind of social, cultural, and linguistic conditions which produce differential cognitive behaviours. Hence it becomes appropriate to reiterate the point made by Skutnabb-Kangas and Toukomaa (1976) -- that these conditions be considered the cause of varied cognitive behaviours, and not the related phenomena (e.g., semilingualism) as the cause of specific school performance. This would change the direction in cognitive studies, from an individual- and phenomenon-oriented (i.e., psychological) perspective to an interdisciplinary perspective wherein language, culture, and social structure are considered as intervening variables in the process of cognitive development.

CHAPTER X

SOCIAL AND EDUCATIONAL IMPLICATIONS OF THE STUDY

Introduction

The focus of this study was to unravel some of the relationships of language, culture, social class, and cognitive style in higher cognitive processes, within a cross-cultural and developmental framework.

Previous studies (Angel, 1972; Lesser, 1971; and Lesser, Fifer & Clark, 1965) have considered only one or some of these variables, never all of these variables together. This study was an attempt to fill this gap. At this point, it will be useful to point out the limitations of the present study, for future references.

It would have been useful, conceptually and empirically, to include representative samples from all the various social, cultural, and linguistic groups. As the study now stands, the missing cells have made impossible the inclusion of the effect of interaction of the variables. As well, the study has presented a more-or-less broken chain in the continuum of cognitive development, vis à vis social, cultural, and linguistic (unilingual/bilingual) variables. Had the methodological procedure been complete, a fuller picture of cognitive development would emerge, one that could have accounted for all the variations in the cognitive continuum. However, such a consideration may not be representative of the existential situation of the communities studied. One is thus forced to choose between being "realistic" and "scientific." In this case, this researcher has chosen to represent the data existentially. Nevertheless, the result of this study has indicated that there are strong and consistent influences from the social, cultural, and linguistic domains, particularly when these domains are within the cross-cultural

and developmental contexts.

It was noted that the type of social/psychological experience, the quality of language experience, the pattern of cultural emphasis, and the specific cognitive style, all permeate the development of cognitive skills of an individual. If the experiences a child receives are additive, then that child's cognitive skills will be enhanced. If the experiences are subtractive, then that child's cognitive skills will be affected accordingly. These will have serious ramifications in a child's intellectual, particularly school-related activities.

Keeping in mind the limitations of this study, we now proceed to the implications. These are discussed within the social and education contexts.

Implications of Cognitive Style

Influences on cognitive processes are essentially rooted in the experiences of the home, long before the child begins school. During the child's formative years, certain patterns of cognitive behaviour are developed, which are closely related to the parental cognitive styles. Later, the child's stylistic behaviours are reflected in his/her higher cognitive behaviours (Kogan, 1976). In infancy, the parent's (especially the mother's) cognitive style and the concomitant teaching style become a pre-determining factor in the development of the child's particular mode of cognition. By the time the child reaches school, he/she already has an established style of behaviour and orientation towards the world.

One might ask at this point: To what purpose does the role of cognitive style serve in the schooling context? We have already established that cognition is the process of acquiring knowledge, which involves perceptual and conceptual skills. If individual variation in cognition is recognized, then it opens possibilities as to how the full potentials of

the child might be developed. At the schooling level, it implies the consideration of individual characteristics of the pupils and the type of instructional practices from which they can best benefit. Relevant issues to pursue, pertaining to pedagogical practices, are: What is the orientation of educators? Are they oriented toward finding the best teaching methods? Are they oriented toward constructing the best curriculum materials? Or, are they oriented toward ensuring that the pupils benefit best from the schooling experience?

Lesser (1971) suggests that the latter orientation must be foremost. Education must be pupil oriented for the simple reason that all students do not come from a homogeneous environment. Hence, uniformity of teaching method and/or curriculum materials would not be applicable to all. If individual differences could be recognized, and the present study suggests that they can, then teaching strategies should be structured to match the pupil's style of cognizing. This implies that the onus is on the educational authorities to provide teachers who are well-trained and who are capable of recognizing individual differences. That would mean that teachers would have to get away from their predominantly "middle class" bias in their attitudes and values. That they would be able to recognize that there are pupils who come from a socially and culturally different background, with varying cognitive styles.

Various types of cognitive style have been offered by different researchers. In the main, there are two types: one that relates to the capacity in a task, and another that relates to the strategy (Lesser, 1971). Witkin's pertains to the former, while Sigel's to the latter. If the child's particular style could be deduced, then the goal of education -- that is, to ensure that the pupil benefits from the system, would be made

easier. The implications of research findings on the various factors relating to the development of certain stylistic behaviours is heuristic in providing relevant information in this regard. Furthermore, the issue of whether particular cognitive style might facilitate or inhibit the learning process could be considered.

In general, both Witkin's and Sigel's stylistic constructs imply two types of orientation, namely, the global (including the relational) and the analytic. Each of these styles manifests itself in a different manner within the learning context. For instance, the globally oriented child is more attuned to didactic learning situations; while the analytically oriented child is more attuned to inductive learning situations (Messick, 1970). Research results have consistently shown that the analytic child could benefit more from our Western-type of education. The ramification of this finding is that there are children in our school systems who have not been able to maximally benefit from the existing system. Lesser (1971) suggests that for the globally oriented children, we should develop their ability to change their cognitive approach when they are confronted with changing task requirements. In other words, it is suggested that the teacher's role is to help these children to be more adaptive to different situations; to help them gain from the learning situation by providing alternate patterns of behaviour. In sum, it implies helping these children to be more cognitively flexible.

These various studies have called attention to the consideration of educational goals which are pupil oriented, the recognition of individual differences in the learning process, as well as the implementation of appropriate teaching strategies which are socially and educationally relevant to the pupils.

Implications of Social and Cultural Practices

The early socialization experiences of the child play an important role in his/her construction of the world (Church, 1965). One social institution which is particularly influential is the educational/schooling environment in which the child spends the predominant portion of his/her young life. When the experiences of the home are smoothly continued into the school, then a child is able to experience the social and psychological continuity between these two environments. At the moment this continuity pertains more to the experience of the middle class child. When the experiences of the home are radically different from those of the school, then the child is faced with a social and psychological dilemma. When this experience is extensive, as in the working class child's placement in a school where there is a middle class orientation in terms of behavioural expectations, the child might experience pressures from both the school and the home, to conform to conflicting types of behaviour. Or, when a minority child is placed in a school where a foreign language is spoken, in which the speaking of the mother tongue is forbidden, and in which culturally different behaviours are expected; then, the strangeness of this new environment can be overwhelming. The unfamiliarity with the demands of the new environment can be psychologically alienating, if the child has not received adequate preparation for this new experience. To this bewildered child, there are several alternatives for adaptation: to conform to the demands of a stranger who is the teacher; to behave in a customary manner as in the home; or to react against the parents or the teacher, or both. Whichever way the child chooses to act or react would create a social or linguistic-cultural gap. How is this gap to be bridged? Must the child struggle on his/her own, thereby bring on more unnecessary

frustrations? Or, are some other authority responsible in the bridging of this gap, particularly when this other authority is responsible for this in some way.

Ideally, it would be productive to have both the parents and the teachers co-operate together towards bridging the home-school gap, as suggested by Ashworth (1975). It has become increasingly desirable to develop a partnership between parents and teachers in the development of the full potentials of the pupils. An end result of such efforts is the growth of the home-school associations. However, this is still a middle class concept, not readily possible to the working class parents, in practical terms. Visits to these association meetings would reveal the relative lack of parental involvement in the working class neighbourhood schools. This is not to say that these parents are not interested in the welfare of their children. In most cases, these parents could not afford the time for the attendance of such meetings. Generally other priorities are present that could deter the attendance, such as long hours of work, shift hours, care of the home and young children, and various other personal reasons. For the immigrant parents, there is an additional problem -- the inability to communicate in the language of the community. In these cases, Ashworth (1975) suggests that it would be up to the school authorities to bridge the home-school gap. She further suggests that acculturation classes be extended to the parents, to provide them with information about the schools, the various health and social services which are available in the community. Thus, an important link could be built between these families and the educational authorities.

It would appear to be productive for school authorities to take it upon themselves to become knowledgeable about both the social and

physical environments from which their pupils come from. Active involvement with these families would be one step towards this end. Another avenue would be to explore the social relevance of the existing educational practices with reference to these children. Are these practices consonant with the practices of the home? Are they helping to develop the children's potentials? Or, are they stifling their growth mentally and emotionally? Here, an understanding of Freire's concept of education would be noteworthy.

Freire (1972) proposes a liberating education which "consists in acts of cognition, not transferral of information" (p.67), and a problem-posing education which "entails at the outset that the teacher-student contradiction be resolved" (p.67). In terms of application, this education theory would imply that the teacher's role is to resolve the essential social differences which create a gap between them. It would mean that for the understanding of class-related behaviours, it would be useful if teachers could gain some knowledge of class differences and the ramifications of such differences, if they could acknowledge their own middle class backgrounds (Stacey, 1976), and if they could make a conscious effort in understanding the differential behaviours and expectations of their students. Moreover, it would imply that teaching is not merely the transfer of information or knowledge, without regard for the experience of the students. It would infer that teaching might begin at the concrete level of the students, by providing materials which would act as a continuity between the two different (home and school) environments. Such materials might incorporate socially relevant information which explains the differences between these two environments, in order that the students would feel more at ease with the learning situation.

Subsequently, this could lead to more active involvement, further queries, analyses and eventually syntheses of the information presented. Successively, more alternatives could be offered to the students, thereby offering opportunities for deliberation. Ultimately, the experience of conscious learning might take place under these conditions.

The eventual goal of the Freirean-type of education is to produce an individual who is the actor in the learning situation rather than a passive receptacle of knowledge, who is able to analyse the situational circumstances confronting him/herself, and who is able to come to terms with these and other problems through the co-operative efforts of both the teacher and the student.

Implications of Second Language Programmes

We have discussed the effects of language experience and cognitive consequences in an earlier chapter. We have also discussed the differential cognitive outcomes of children from various linguistic-cultural-social backgrounds. The remaining issue to be considered here is the implications of second language programmes. In this section, only the implications of English as a Second Language (ESL) pertaining to the Chinese-speaking students will be offered.

It has been acknowledged (Greenfield, 1976) that our existing educational practices have failed in the achievement of such social goals as social equality and cultural identity for the students. The results of this study tend to support Greenfield's lament. It appears that both the Canadian and Hong Kong educational systems still have a long distance to cover before they reach the universal goal of providing a cultural identity as well as equal educational opportunities for their students.

In the domain of ESL programmes, the immediate goals of these two

educational systems differ. In Canada, ESL programmes are directed towards the culturally and linguistically different students, usually the immigrants. Their chief aims are to teach English intensively, so that the students can attain sufficient oral and written skills in English, in order that they may learn to adapt quickly into the social and cultural milieu of the school and community (Ashworth, 1975). In Hong Kong, ESL programmes are available to all students, with no exceptions. Unlike Canada where there is a specific aim in the programme, the Hong Kong educational authorities have not formulated any explicit language education policy (Cheng, Shek, Tse & Wong, 1973). Thus the aims and quality of these programmes differ considerably, and are often monitored by the individual schools. Under this system, parents strive to send their children to schools which offer the best chances for quality language education. This action is based on the belief that their children will acquire a sufficient level of competency in the English language for eventual economic gain (as in better job opportunities within a highly competitive system). In the main, both educational systems are concerned with providing ESL programmes, one to minority students (in Canada), and one to the native population (in Hong Kong).

With respect to ESL teaching strategies, different strategies are adopted. In Canada, by and large, ESL programmes are characterized by "reception," "transition," or "withdrawal" programmes (Ashworth, 1975). Regardless of the type of programme, each of them is concerned with producing efficiency in the second language (L2). The programme itself often consists of extensive grammatical drills. The teachers in such programmes rarely understand the cultural backgrounds of these students,

nor do they speak their languages. The students themselves are segregated into special language classes -- sometimes these classes are under the auspices of Special Education or Language Disability programmes (sic!). The purpose of these programmes is to replace the first language (L1) with a second (L2) -- hence little consideration is given to the maintenance of the mother tongue or L1. The social implications of these programmes, with the implicit rejection of the mother tongue by the school authorities, may have serious social ramifications. Spoerl (1943) spoke of the psychological dilemma of the immigrant children. As native-born citizens, they are identified with the land of their birth and its social institutions. But as children of foreign-born parents, they invariably inherit a certain cultural heritage from their parents. When the host and the family cultures are in conflict, these children invariably experience a psychological dilemma. One outcome of this dilemma is the complete rejection of their mother tongue, their cultural heritage, and even their parents and what they stand for. This has been a pervasive phenomenon among a number of young Chinese-Canadians. Moreover, there is a lack of communication between parents and children. There is the feeling of betrayal on both sides. Family relations are torn asunder. The disparity between the home and school are drawn further apart. Energies which could have been used constructively in other domains by the individual are spent in resolving this predicament. The unconscious doings of the educational authorities in their language policies may have unwittingly produced the classic "marginal man" -- one who feels non-acceptance from the host society and rejection from his kin, and at the same time one who feels ill at ease with himself.

In Hong Kong, strategies for ESL teaching are more-or-less socially

determined. This is to say, there is little standardization in practice. Strategies run the gamut of varying levels of efficiency. But whatever is deemed to be most effective is widely practiced, with little consideration for its appropriateness to the target population. Although English is usually taught as a second language in primary schools and is the medium of instruction in secondary schools, however, there is no policy of replacing the Chinese mother tongue with English. Even with the maintenance of L1, the status of English still reigns supremely above the vernacular. This imposition of a foreign language on a historically proud people has affected their social solidarity (Schaeffer Fu, 1976). Those who aspire to social and economic success by diligently learning the English language are seen by the more conservative as betraying the loyalty of the group; while those who adhere steadfastly to their cultural heritage by maintaining language loyalty are ridiculed by the former group as socially and economically naive (Schaeffer Fu, 1975). For the young children (as in this study) the social ramifications of the linguistic situation tend to be counteracted by parental support and their insular lifestyle. The middle class children's dilemma is buffered by their parents' incessant encouragement and emotional support. However, Schaeffer Fu (1975) states that the effects of the various social ills are felt when these children reach the age when they start to question their identity within their particular cultural milieu. The crisis of cultural identity, the pressures of an imposed language, and the educational emphasis on strategies rather than the real needs of the students, have inevitably created a psychological problem of cultural schizophrenia among this group of Hong Kong students.

The imminent predicaments of the various types of ESL programme in

Canada and Hong Kong are brought into focus. And the unwitting emphasis by educational authorities on the success of the programmes, rather than on the well-being of their students, has brought considerable pain to the ones whom they attempt to serve. In the last few years, the "crisis of purpose" in education is questioned (Greenfield, 1976; and Schaeffer Fu, 1976). Following on the heels of increased awareness in "cultural identity" is the question of social relevance in second language education. Jakobovits (1971) poses this question: Can functional bilingualism be achieved within a classroom context? He sees the ills of indiscriminate applications of "tried and true" strategies of teaching a second language, without proper regard for the social or cultural backgrounds of the students. What is success for one student population might turn out to be failure for another. This is a point second language educators might consider. In our haste to discover the most "successful" method, have we considered the relevance of education, the purpose of education, the social and cultural importance of education, and finally, the social and psychological well-being as well as the needs of the students?

This researcher has some sympathy for Freire's (1970) ideas on educational practice, which might serve us well in the context of second language education. To Freire, all educational practice implies a theoretical orientation of "human-in-the-world." This human-in-the-world is one which:

involves not just the association of sense images, as for animals. It involves, above all, thought-language; that is, the possibility of the act of knowing through his praxis, by which man transforms reality. For man, the process of orientation in the world can be understood neither as a purely subjective event, nor as an objective or mechanistic one, but only as an event in which subjectivity and objectivity are united. Orientation in the world, so understood, places the question of the purposes of action at the level of critical perception of reality (Freire, 1970, p.206).

This concept of education emphasizes the humanizing aspect. According to this philosophy, the educator must consider the social, cultural, and psychological relevance of an education programme for the pupils. In everyday terms, within the domain of second language education, it implies that teaching might begin at a level of language which can be easily understood by the pupils. At the same time this language must have relevance for the pupils. The educator might learn to relate the objective part of the curriculum materials to the subjective (i.e., social and cultural) experiences of the pupils. In order to gain an implicit understanding of the existential circumstances of the pupils, the educator might invite participation from parents, or individuals from the sub-cultural community. The educator might also attempt to explore the patterns of inter-relational dynamics between the host and immigrant/minority communities. In other words, second language education involves not just the pupils and the teacher, but extends to the parents, the immigrant/minority community, and the community at large.

In sum, the Freirean-type of educational philosophy proposes that second language education should consider not only the linguistic aspects of education, but the social as well as the cultural aspects. It might also consider the issues of adaptation of the child into the school environment, the particular family into the community, as well as the acceptance of this minority community by the host society. Here, adaptation is not taken to simply mean assimilation or acculturation. It is taken to imply a process whereby the individual's cultural difference is given recognition by the dominant group. The minority status would have to be elevated to a level where one can retain a sense of dignity as a human being, even with all the concomitant cultural and linguistic

diversity from the mainstream society. In the Freirean analysis, it is only within the climate of "conscientization" that the process of humanization can become possible. Humanization is the ultimate process wherein one becomes the actor in the act of knowing, knowing ourselves, others and our world.

CONCLUSION

In conclusion, various implications for cognitive, social, and psychological development have been presented. We have a picture of a child's emergent growth patterns. This child brings with him/her the demographic characteristics passed on by his/her parents: sex, race, ethnicity, social backgrounds. At birth, he/she is also presented with a particular cultural and symbolic way of living. These are the varied threads of living from which he/she constructs the lived realities. Whether a child can benefit from his/her social surroundings depends upon his/her natural and acquired propensities, and particularly the combined efforts of his/her caretakers -- the parents and the educators. At the level of the home, where the climate of warmth and support prevails, a child's development accelerates, both mentally and psychologically. In contrast, when he/she is immersed in a socially and psychologically devastating atmosphere, his/her mental and psychological development will be impaired accordingly. At the level of the school, where learning situations are continuous with the home, a child progresses intellectually. Conversely, when learning situations pose social, cultural, and linguistic problems, a barrier to intellectual development is erected. The diverse circumstances under which a child grows may have serious ramifications in his or her future, and the future of the society. Pedagogically and philosophically, we, as educators and social scientists, are immersed in

the most exciting climate of our times. We have the chance to participate in the "liberation" process. Perhaps we might take a little time to deliberate the various priorities and relevancies in our respective disciplines within the existing social/cultural contexts, and put our concerted efforts into more socially relevant practices.

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Appendix 1

The Blishen scale (Blishen & McRoberts, 1976) based on occupation-education-social-status:

Over 70.00 -- higher professional class: doctors, dentists, lawyers, professors, engineers, executives, etc.

60.00-69.00 -- higher managerial class: includes managers, senior civil servants, accountants, teachers, etc.

50.00-59.00 -- intermediate class: lower professional, junior managerial, and highly skilled technical occupations.

40.00-49.00 -- clerical, sales, and skilled workers.

30.00-39.00 -- semi-skilled and semi-technical workers.

Below 30.00 -- non-skilled and manual workers.

Status (or class) stratification:

- upper middle class: over 70.00.
- middle class: from 40.00 to 69.00.
- transition working class: from 40.00 to 49.00.
- working class: 39.00 and below.

For list of occupational classifications, see Blishen and McRoberts (1976).

Appendix 24-point scale on unilinguality/bilinguality:

- (1) Unilingual. Any individual who can speak/understand only one language, and who cannot speak/understand passively any other language.
- (2) Semilingual. Any minority individual who does not know any language properly, neither the mother tongue nor the official language of the country.
- (3) Compound bilingual. Any individual who can speak/understand efficiently predominantly one language, and who can speak/understand passively another language.
- (4) Fluent bilingual. Any individual who can speak/understand proficiently in two languages.

Appendix 3

BIOGRAPHICAL DATA

This information is for research purposes only, it is strictly confidential.

Name:

Sex:

Birthdate:

Birth place:

If birth place is outside of Canada, state length of stay in Canada:

Address:

Residence district:

Name of school:

Level of schooling:

Father's educational background:

_____ no schooling

_____ some elementary schooling

_____ completed elementary schooling

_____ years of secondary/high school

_____ completed secondary/high school

_____ years of post-secondary schooling

_____ certificate _____ diploma _____ university degree

Father's occupation: _____

Father's language ability:

_____ English _____ Chinese _____ Other (specify) _____

BIOGRAPHICAL DATA (CONTINUED)

Mother's educational background:

_____ no schooling
 _____ some elementary schooling
 _____ completed elementary schooling
 _____ years of secondary/high school
 _____ completed secondary/high school
 _____ years of post-secondary schooling
 _____ certificate _____ diploma _____ university degree

Mother's occupation: _____

Mother's language ability:

_____ English _____ Chinese _____ Other (specify) _____

Language(s) spoken at home:

_____ English _____ Chinese _____ Other (specify) _____

Child's own rating on linguality:

_____ unilingual _____ semilingual _____ compound bilingual
 _____ fluent bilingual

Interviewer's rating on child's linguality:

_____ unilingual _____ semilingual _____ compound bilingual
 _____ fluent bilingual

Teacher's rating on child's linguality:

_____ unilingual _____ semilingual _____ compound bilingual
 _____ fluent bilingual

Appendix 4

REVISED VYGOTSKY BLOCKS ADMINISTRATION*

Materials:

- Vygotsky blocks;
- two 10" x 12" white cardboards, one plain, one divided into four equal sections of 5" x 6", with the names BIK, CEV, LAG and MUR written in block letters in each section.

Procedure:

- (1) Before the test administration, the child is engaged in a simple game of "say the letters." This is for the benefit of the younger children, so that they may familiarize themselves with the letters.
- (2) The blocks are spread randomly, with name-side down, on the plain sorting board. This board and the one with the names are placed side by side in front of the child.
- (3) The following instructions will be given:

"Here are twenty-two different looking blocks. They are of five different colours, six different shapes. They can be sorted into four different groups. Each group has a made-up name. They are called BIK, CEV, LAG, and MUR (Point to each of the names on the board). Each block has only one name at the bottom end. There are some blocks that go with BIK, some with CEV, some with LAG, and some with MUR. I'll show you one for example (show the orange triangular MUR block, turn it over for the child to see). Now this one is a MUR. I want you to find one block which you think will have the same name, but without turning it over to look at the name. Remember, you cannot turn the block over to look for the name. When you find one which you think is a MUR block, then put it in the MUR section. After that, you will have to tell me why you have picked that block. Each time you pick one block, you will have to give me the reason why you picked that block. After all the blocks are done, you will have to tell me why you think they should go where you put them.

Remember, you can only pick one block at a time, do not turn it over. Put it where you think it belongs. Then tell me the reason why you put it there.

Now you can begin. We will begin with this block (the orange, triangular MUR). I want you to find another one which you think will have the same name. Then tell me why you think it will have the same name."

Appendix 4 (continued)

- (4) The subject's moves and responses will be entered verbatim on the score sheet, and the number of clues given will also be noted.
- (5) After all the blocks are done, time is given for the child to make any re-arrangements. Then the following instructions are given:

"You can now turn over all the blocks. Put each block in its proper place. Then take a good look at them. After that, tell me the reason why you think the blocks that go together should have the same name."
- (6) The subject's answer will be noted and scored according to the scoring criteria.

*Parts of the test administration was adapted from the Harrington study (1969).

Appendix 5

VYGOTSKY BLOCKS SCORING CRITERIA

Each response or move is scored according to the following system (Penny, 1951, pp. 71-72):

<u>Common Systems:</u>		<u>Score</u>
H	Height	2
W	Width	2
Sa	Surface area	2
F	Form or shape	2
C	Colour	2
V	Volume	3
SaH	Surface area and height	4
<u>Uncommon Systems:</u>		
f	Poor forms (the matching of a triangle to a trapezoid because 'one is an incomplete version of the other;' also use of the concept such as 'angularity' or number of sides.)	2
M	Mixed forms (the use of 'one of a kind' type of system	2
E	Equality (the blocks are placed together because of equality of numbers, colours, or forms in each group.)	2
P	Patterns (the blocks are fitted together in order to "make" something, i.e., a tower, a house, or other complex patterns.)	1
MF	Mixed forms	2
Mf	Mixed poor forms	2
g	guessing, no reasons given	0

Appendix 5 (continued)

Levels of performance:

The final response for step (5) on the administration procedure will be scored according to the following criteria:

- (1) Syncretic thinking -- score of 10. The child can give no explanation whatsoever even with prompting. "Concepts" are based on subjective impressions and syncretic images of "unorganized congeries" or "heaps." Responses are characterized by the following scoring system: P, g.
- (2) Complex thinking -- score of 20. The child can articulate only one quality. There is the use of concrete or factual properties of blocks in accordance with some classification principle, as in approximate forms, colour, or shape. Responses are characterized by the following scoring system: H, W, Sa, F, C, f, M, E, MF, Mf, CF, Cf, Ff.
- (3) Pseudo concepts -- score of 30. The child applies intuitive apprehension of two qualities, but not the correct ones. He/she can now discern two qualities only upon prompting by the examiner. Responses are characterized by the following scoring system: V, HF, HC, WF, SaF, WC, SaC.
- (4) True concepts -- score of 40. A solution which takes into account that two qualities have to be combined: height and size; size and volume; height and volume. This stage of thinking involves abstractness and generality as well as the process of analysis and synthesis.

All scores on the scoring sheet and the final score will be added to produce the total score: 1(X) to 21(X) + final score = total score.

VYGOTSKY BLOCKS RECORD FORM

Name :

Age :

Grade :

Date :

Move No.	Comments
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
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